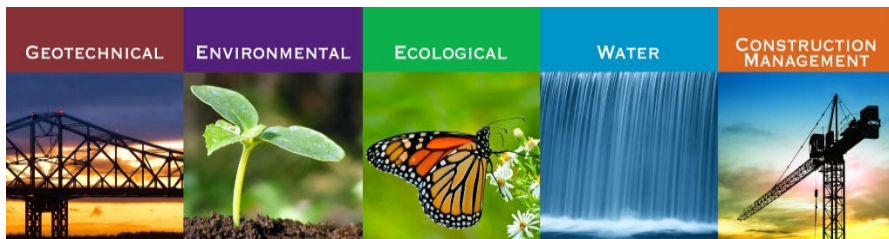




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SITE INVESTIGATION REPORT (SIR) ADDENDUM

**642 Allens Avenue
Providence, Rhode Island**

April 18, 2024

GZA File No.: 03.0033554.01

RIDEM Case No. 98-004 / File No. SR-28-1152



PREPARED FOR:

Rhode Island Department of Environmental
Management (RIDEM)
Providence, Rhode Island

ON BEHALF OF: The Narragansett Electric Company

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April 18, 2024
File No. 03.00033554.01

Via E-Mail and U.S. Mail

Mr. Joseph Martella
Rhode Island Department of Environmental Management (RIDEM)
Office of Land Revitalization and Sustainable Materials Management
235 Promenade Street
Providence, Rhode Island 02908

Re: Site Investigation Report (SIR) Addendum
642 Allens Avenue
Providence, Rhode Island
RIDEM Case No. 98-004 / Site Remediation File No. SR-28-1152

Dear Mr. Martella:

On behalf of The Narragansett Electric Company (TNEC) d/b/a Rhode Island Energy¹ (RI Energy) GZA GeoEnvironmental, Inc. (GZA) is pleased to present to the Rhode Island Department of Environmental Management (RIDEM) the attached *Site Investigation Report (SIR) Addendum* for the Former 642 Allens Avenue Manufactured Gas Plant (MGP) located at 642 Allens Avenue in Providence, Rhode Island (the Site).

The activities described in the attached report were performed in general accordance with the February 2014 *Supplemental Site Investigation Work Plan (SSIWP)*, as well as July 2021 and December 2022 *Replacement Monitoring Wells Installation Work Plans*, prepared by GZA on behalf of TNEC and submitted to RIDEM. This *SIR Addendum* presents a comprehensive evaluation of data and other information collected to date to address the applicable requirements of Section 1.8 of the Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases (Remediation Regulations 250-RICR-140-30-1). This *SIR Addendum* also includes an evaluation of remedial action alternatives to satisfy the requirements of Section 1.8.4 and presents the preferred remedial action alternative to achieve compliance with the Remediation Regulations. With the submittal of this report addendum, we believe that the Site Investigation activities for the Site are complete, and we request that a Program Letter is issued for the Site. Should you have any questions or comments regarding the information presented herein, please do not hesitate to contact the undersigned or Amy Willoughby from RI Energy at 401-258-5410.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.


Sara Haupt, P.E.
Project Manager


Margaret S. Kilpatrick, P.E.
Principal


James J. Clark, P.E.
Consultant/Reviewer

Attachment: *SIR Addendum*

cc: Amy Willoughby, RI Energy
Robin Main, Hinckley Allen

¹ The Narragansett Electric Company d/b/a National Grid transitioned to The Narragansett Electric Company d/b/a Rhode Island Energy on May 24, 2022. For clarity, this report references The Narragansett Electric Company as Owner of the Site for the time period of early 2006 to present day.



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1.0 INTRODUCTION

On behalf of The Narragansett Electric Company (TNEC) d/b/a Rhode Island Energy (RI Energy), GZA GeoEnvironmental Inc. (GZA) has prepared this *Site Investigation Report Addendum (SIR Addendum)* describing activities performed at the Former 642 Allens Avenue Manufactured Gas Plant (MGP) located at 642 Allens Avenue in Providence, Rhode Island (refer to Figure 1 (*Title Sheet and Index to Drawings*) which presents the Site Locus Plan). The Site is also defined as Providence Tax Assessors Plat (A.P.) 101 Lot 1 and A.P. 56 Lot 5, 273, 316 and 317. These properties are collectively referred to herein as the “Site.”

This *SIR Addendum* presents a summary of environmental investigations performed at the Site dating back to 1994. In addition, this report presents the results of investigations related to data gaps that were identified in the February 2014 *Supplemental Site Investigation Work Plan (SSIWP)*, as well as the July 2021 and December 2022 *Replacement Monitoring Wells Installation Work Plans*, which were submitted to the Rhode Island Department of Environmental Management (RIDEM) Office of Land Revitalization and Sustainable Materials Management (OLRSMM; formerly the Office of Waste Management (OWM)).

This report includes a summary of the Site’s history, a description of the environmental setting and a summary of the findings and conclusions from previous reports and recent investigations consistent with Section 1.8.3 of the Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases (250-RICR-140-30-1). In addition, this report includes an evaluation of remedial alternatives and the selection of a preferred alternative for the Site consistent with Section 1.8.4 of the *Remediation Regulations*. This report, together with previous submissions to RIDEM, serves as the SIR for this Site. With the submittal of this report addendum, we believe that the Site Investigation activities for the Site are complete, and we request that a Program Letter is issued for the Site.

This *SIR Addendum* includes data/information previously presented in the following reports/documents:

- *Site Characterization Report* prepared by Resource Controls Associates (RCA) on behalf of the Providence Gas Company (PGC) dated July 1994;
- *Summary Report – Phase 1A Field Investigations* prepared by RCA on behalf of the PGC dated February 1995;
- *Condensate Tank Closure Status Report and Remedial Action Plan for Compressor Building No. 2* prepared by RCA on behalf of PGC dated February 1995;
- *Underground Storage Tank (UST) Closure Assessment* prepared by Hoffman Engineering, Inc. (HEI) on behalf of the PGC dated October 1995;
- *Summary Report – Phase 1B Field Investigations* prepared by RCA on behalf of the PGC dated June 1996;
- *Remedial Action Report for Short Term Measure Performed at the Providence Gas Company* prepared by RCA on behalf of PGC dated June 1996;
- *UST Closure Assessment* prepared by HEI on behalf of the PGC dated September 1998;
- *Remedial Action Work Plan (RAWP)* prepared by Environmental Science Services (ESS) prepared on behalf of the PGC dated December 1998;
- *Subsurface Investigation and Proposed Remediation Algonquin Generator Construction Area* prepared by ESS on behalf of the PGC dated October 1999;



- *Summary Letter* prepared by PGC dated May 2001;
- *Modified RAWP* prepared by Vanasse Hangen Brustlin (VHB) on behalf of the New England Gas Company (NEGC) dated November 2001;
- *Remedial Action Closure Report* prepared by VHB on behalf of the NEGC dated November 2002;
- *Remedial Action Closure Report* prepared by VHB on behalf of the NEGC dated December 2002;
- *SIR* prepared by VHB on behalf of the NEGC dated April 2003;
- *Oxide Box Waste Summary Memo* prepared by VHB on behalf of TNEC dated January 2009;
- *Construction Completion Report for Demolition and Decommissioning of Gasholders Nos. 18 and 21* prepared by Brown and Caldwell on behalf of TNEC dated July 2010;
- *Soil Management Plan (SMP)* prepared by GZA on behalf of TNEC dated September 2012;
- *Summary of September 2012 Sinkhole and Washout Areas Repair Activities* prepared by GZA on behalf of TNEC dated February 14, 2013;
- *Summary Letter Report – Temporary On-site Treated Groundwater Discharge Permit* prepared by GZA on behalf of TNEC dated May 23, 2013;
- *Summary of Hoxie Run Natural Gas Line Upgrade Activities* prepared by GZA on behalf of TNEC dated December 12, 2013;
- *Supplemental Site Investigation Work Plan* prepared by GZA on behalf of TNEC dated February 2014;
- *Summary of LNG Water Line Upgrade Activities* prepared by GZA on behalf of TNEC dated November 6, 2014;
- *Summary of Gas Line Repair Soil and Groundwater Management Activities* prepared by GZA on behalf of TNEC dated October 15, 2015;
- *Groundwater Monitoring Reports:*
 - *Groundwater Monitoring Report – 2003 to 2005* prepared by VHB on behalf of TNEC dated December 2005;
 - *Groundwater Monitoring Report – 2008* prepared by VHB on behalf of TNEC dated June 2008;
 - *Groundwater Monitoring Report – 2009* prepared by GZA on behalf of TNEC dated February 2010;
 - *Groundwater Monitoring Report – 2010* prepared by GZA on behalf of TNEC dated August 2010;
 - *Groundwater Monitoring Report – January to June 2011* prepared by GZA on behalf of TNEC dated July 2011;
 - *Groundwater Monitoring Report – July to December 2011* prepared by GZA on behalf of TNEC dated September 2012;
 - *Groundwater Monitoring Report – 2012* prepared by GZA on behalf of TNEC dated August 2013;
 - *Groundwater Monitoring Report – 2013* prepared by GZA on behalf of TNEC dated September 2014;



- *Groundwater Monitoring Report – 2014 through 2017* prepared by GZA on behalf of TNEC dated January 2021;
- *Groundwater Monitoring Report – 2018* prepared by GZA on behalf of TNEC dated January 2021;
- *Groundwater Monitoring Report – 2019* prepared by GZA on behalf of TNEC dated January 2021;
- *Groundwater Monitoring Report – 2020* prepared by GZA on behalf of TNEC dated February 2021;
- *Groundwater Monitoring Report – 2021* prepared by GZA on behalf of RI Energy dated September 2022; and
- *Groundwater Monitoring Report – 2022* prepared by GZA on behalf of RI Energy dated June 2023.
- Holder 18/21 Capping Project:
 - *Short Term Response Action Plan (STRAP) – Holder 18/21 Capping Project* prepared by GZA on behalf of TNEC dated April 2016;
 - *STRAP Addendum – Holder 18/21 Capping Project* prepared by GZA on behalf of TNEC dated May 2016;
 - *Short Term Response Action Approval Letter* issued by RIDEM to TNEC dated May 18, 2016; and
 - *STRAP Completion Report – Holder 18/21 Capping Project* prepared by GZA on behalf of TNEC dated April 2017.
- Dike Access Road Project:
 - *STRAP – Dike Access Road* prepared by GZA on behalf of TNEC dated June 2016;
 - *STRAP Addendum – Dike Access Road* prepared by GZA on behalf of TNEC dated August 2016;
 - *Short Term Response Action Approval Letter* issued by RIDEM to TNEC dated August 25, 2016;
 - *STRAP Addendum – Holcim Driveway* prepared by GZA on behalf of TNEC dated May 2017; and
 - *STRAP Completion Report – Dike Access Road Project* prepared by GZA on behalf of TNEC dated February 7, 2020.
- Liquefaction Project:
 - *STRAP – Proposed Liquefaction Project* prepared by GZA on behalf of National Grid LNG LLC (NG LNG LLC) dated May 2017;
 - *STRAP Addendum – Proposed Liquefaction Project* prepared by GZA on behalf of NG LNG LLC dated October 11, 2017;
 - *Short Term Response Action Approval Letter* issued by RIDEM to NG LNG LLC dated October 27, 2017; and
 - *Short Term Response Action Closure Report* prepared by GZA on behalf of NG LNG LLC dated March 21, 2023.
- PIP:
 - *PIP Process Initiation Letter* from RIDEM to TNEC dated September 2016;
 - *PIP* prepared by GZA on behalf of TNEC dated October 2016;



- *PIP* prepared by GZA on behalf of TNEC dated May 2017;
- *PIP Comment Letter* from RIDEM to TNEC dated June 2017;
- *Response to Comments – PIP* prepared by GZA on behalf of TNEC dated June 2017;
- *Final PIP* prepared by GZA on behalf of TNEC dated June 2017; and
- *Public Involvement Plan Approval Letter* issued by RIDEM to TNEC dated June 28, 2017.

This report and its conclusions are subject to the Limitations presented in Appendix A (*Limitations*) and are subject to modification if subsequent information is developed by GZA or any other party.

In accordance with Section 1.8.8 of the Remediation Regulations, a completed Site Investigation Submission Checklist is included in Appendix B (*SIR Checklist*).

Note, this report presents information obtained from borings completed by RI Energy or their predecessors for geotechnical, structural or civil engineering purposes. As most of these boring logs have not been provided to the Department in previous submittals, logs that are referenced herein are provided in Appendix C (*Historical Geotechnical Boring Logs*).

1.1 PROJECT OBJECTIVES

The Site was the location of the Former 642 Allens Avenue MGP and is listed as a “State Site” under RIDEM’s Remediation Regulations (RIDEM Case No. 98-004 / File No. SR-28-1152). In February 2014, GZA, on behalf of TNEC, submitted a *SSIWP* to RIDEM with the objective of completing the Site investigation consistent with the Remediation Regulations. The primary objective of the February 2014 *SSIWP* was to collect supplemental Site data necessary to complete the following:

- Investigate data gaps identified in the February 2014 *SSIWP*;
- Further characterize the nature and extent of impacted soil;
- Further characterize groundwater quality at the Site;
- Compare soil and groundwater data to applicable RIDEM criteria;
- Further characterize Non-Aqueous Phase Liquid (NAPL) impacts;
- Identify potential exposure pathways and receptors; and
- Complete the requirements of a Site Investigation in accordance with RIDEM’s Remediation Regulations.

The investigation activities presented in this *SIR Addendum* were performed in general accordance with the *SSIWP*. Any deviations from the work plans were relatively minor and did not affect the generated data or the conclusions of this report.

Please note that this *SIR Addendum* is intended to supplement the *SIR* prepared by VHB on behalf of the NEGC and submitted in 2003.

1.2 REPORT ORGANIZATION

This *SIR Addendum* is organized in the following manner:



- This section (Section 1.00) provides an introduction to the project and a brief description of the Site Investigation (SI) program;
- Section 2.00 presents a background of the Site and adjoining properties and describes the current condition and the environmental setting of the Site, a summary of Site history information and outlines potential sources of impact from former operations, a summary of the regulatory history of the Site, the results of previous Site investigations and previous remedial actions that have been completed;
- Section 3.00 describes the SI program in detail and provides the results of a quality assurance/quality control evaluation on the resulting data; and a comprehensive evaluation of each data gap with both historical and recently collected data. Given the current and foreseeable Site setting and use, soil and groundwater data were compared to the applicable RIDEM Method 1 GB Groundwater Objectives, the GB-Leachability Criterion and the Industrial/Commercial Direct Exposure Criteria (I/C-DEC). In addition, this section includes a summary of the annual groundwater monitoring reports, as well as monitoring well decommissioning and reinstallation activities completed at the Site;
- Section 4.00 describes the remedial response actions completed at the Site;
- Section 5.00 provides an overview of the nature and extent of observed soil and groundwater impacts. As extensive Site investigation activities have been completed at the Site and documented in previous submittals to RIDEM, this section is intended to be an overview of Site conditions;
- Section 6.00 describes the conceptual Site model (including potential migration and exposure pathways) and outlines potential receptors to identified impacts;
- Section 7.00 outlines the remedial objectives for the Site;
- Section 8.00 identifies three remedial action alternatives and presents the comparative evaluation which was performed to facilitate selection of the preferred alternative;
- Section 9.00 presents the rationale for selection of the preferred remedial alternative;
- Section 10.00 presents the proposed interim groundwater monitoring program;
- Section 11.00 presents a preliminary remedy implementation schedule; and,
- Section 12.00 contains the report Certification per the Remediation Regulations.

2.0 SITE BACKGROUND INFORMATION

The following sections provide a summary of relevant background information for the Site. This information was obtained from earlier reports and the Site reconnaissance performed as part of investigations conducted between 2014 and 2016 and annual groundwater and site monitoring activities from 2016 through 2022. Additional background information can be found in Appendix AA.

2.1 SITE LOCATION, GENERAL DESCRIPTION AND CURRENT USE

The Site was the location of the 642 Allens Avenue Former MGP. The Site is now largely occupied with natural gas utility operations, which serve the City of Providence and the State of Rhode Island. The Site is located on the east side of Allens Avenue, northeast of the intersection of Allens Avenue and Terminal Road in the City of Providence, Rhode Island (refer to



Figure 1 (*Title Sheet and Index to Drawings*) which presents the Site Locus Plan). The majority of the Site is secured with a locked perimeter chain-link fence. The configuration of this perimeter fencing is shown on Figure 3A (*Existing Conditions Plan – Western Side of the Site*) and Figure 3B (*Existing Conditions Plan – Eastern Side of the Site*).

The Site is identified in the City of Providence Tax Assessor's Office as Assessors Plat (A.P.) 56, Lots 5, 273, 316, and 317, and as A.P. 101, Lot 1. The Site consists of approximately 41-acres of land. The entirety of the Site is currently owned by TNEC d/b/a RI Energy. National Grid LNG, LLC (NGLNG, LLC) holds a lease on A.P. 56 Lot 316 and LaFarge Holcim US, Inc. (Holcim) holds a lease on A.P. 56 Lot 273. The entirety of the Site is zoned by the City of Providence as W-3 (Port/Maritime Industrial Waterfront District). The W-3 Port/Maritime Industrial Waterfront District is intended “to promote maritime industrial and commercial uses within the areas of Providence's waterfront, protect the waterfront as a resource for water-dependent industrial uses, and facilitate the renewed use of a vital waterfront”. The current Site layout and key features are shown on Figures 3A and 3B.

For the purpose of this report, the Site has been subdivided into three areas based on current use. Figures 3A and 3B present the location and configuration of the following areas:

- Natural Gas Regulation Facility (portion of A.P. 101 Lot 1 and A.P. 56 Lot 5);
- Liquefied Natural Gas (LNG) Facility (A.P. 56 Lot 316); and
- Holcim Cement Facility (A.P. 56 Lots 273 and 317).

The following table summarizes the five parcels that make up these three Site areas. Parcel locations are also shown on Figures 3A and 3B.

| A.P. | Lot | Lot Size (Acres) | Current Owner | Address | Current Use(s) |
|------|-----|------------------|---------------|--|---|
| 101 | 1 | 11.35 | TNEC | 642 Allens Avenue 670 Allens Avenue | Natural Gas Construction Storage Natural Gas Regulation and Distribution |
| 56 | 5 | 8.90 | TNEC | 642 Allens Avenue | Natural Gas Construction Storage Natural Gas Regulation and Distribution |
| 56 | 273 | 3.90 | TNEC | 139 Terminal Road | Cement Storage and Distribution |
| 56 | 316 | 16.36 | TNEC | 121 Terminal Road | LNG Facility |
| 56 | 317 | 0.49 | TNEC | 121 Terminal Road | Access Road |

2.1.1 EASEMENTS

The following table summarizes existing Site easements, the majority of which are for utility access and maintenance. The location of the easements is shown on Figures 3A and 3B.

| Date | Grantor | Grantee | Present Lot No. | Book (Bk.) and Page | Notes |
|------|--|----------------------------|-----------------|-------------------------|---|
| 1905 | Now or Formerly (N/F) Charles Morris Smith and George M. Smith | N/F PGC | A.P. 101 Lot 1 | Bk. 470 Pages 224 – 229 | Now owned by the City of Providence as conveyed in Book 514 Pages 338-342. Easement is held for railroad tracks that cross the property |
| 1916 | N/F PGC | N/F the City of Providence | A.P. 101 Lot 1 | Bk. 561 Pages 326 – 328 | Easement is held for the Ellis Street Sewer Line that crosses the Site in the Natural Gas Regulator Facility. |



| Date | Grantor | Grantee | Present Lot No. | Book (Bk.) and Page | Notes |
|------|--------------------|--|----------------------------------|--------------------------|--|
| 1961 | N/F PGC | N/F TNEC and the New England Telephone and Telegraph Company | A.P. 56 Lots 273 and 317 | Bk. 1111 Pages 752 – 756 | Easement is held for access to electric and telephone poles in the Holcim Cement Facility and the LNG Facility. |
| 2002 | N/F Southern Union | N/F Narragansett Bay Commission (NBC) | A.P. 101 Lot 1 and A.P. 56 Lot 5 | Bk. 5249 Pages 219 – 322 | Easement is for a large subsurface tunnel used for stormwater management by NBC. Easement is a permanent subsurface easement approximately 70 feet in width and 120 feet in height beginning at different elevations depending on the depth of the tunnel (at least 90 feet below current grade) |

The above table was compiled as a result of a file review conducted at the City of Providence City Clerk’s office and should not be considered to be an official title search. Other easements may exist.

2.2 ADJOINING AREA AND PROPERTY USE

The Site consists of approximately 41 acres with frontage on Allens Avenue to the west and bounded to the east by the Providence River. It is adjoined to the northwest by Motiva/Texaco, and to the south by Terminal Road, the Former Sun Oil/Providence Port facility, and New England Bituminous Terminal Corporation. Figure 4 (*Overall Aerial Site Plan*) presents the location of the Site and these abutting lots. The area bounding the Site is industrial in nature, with parcels zoned W-3 or M-2 (both industrial type zoning). The nearest residential lot is located over 1,000 feet to the south of the Site. The following table presents a summary of abutting parcels and their current use:

| Direction | Tax Assessor’s Plat and Lot | Current Owner | Zoning | Current Use |
|-----------|-----------------------------|--|--------|---|
| North | A.P. 55 Lot 429 | N/F Algonquin LNG, Inc. ² | W-3 | Vacant – Water Lot |
| North | A.P. 55 Lot 196 | N/F Motiva Enterprises (Motiva) | W-3 | Oil and Gas Storage and Distribution |
| West | A.P. 101 Lot 493 | N/F Motiva Enterprises | M-2 | Oil and Gas Storage and Distribution |
| South | A.P. 101 Lot 497 | N/F City of Providence | W-3 | Municipal – Department of Public Works Building |
| South | A.P. 56 Lot 331 | N/F City of Providence | W-3 | Railroad Tracks and Terminal Road |
| Southeast | A.P. 56 Lot 327 | N/F Univar, Inc. | W-3 | Chemical Storage and Distribution |
| Southeast | A.P. 56 Lot 348 | N/F New England Petroleum Terminal LLC | W-3 | Oil and Gas Storage and Distribution |
| Southeast | A.P. 56 Lot 6 | N/F Hudson Terminal Corp | W-3 | Asphalt Storage and Distribution |
| Southeast | A.P. 56 Lot 271 | N/F Glen Falls Lehigh Cement Co | W-3 | Cement Storage and Distribution |

² Please note that this water lot is not considered to be part of the Site. Algonquin LNG, Inc. (predecessor to National Grid LNG LLC) acquired this lot in 1972 for the purposes of a proposed expansion but never operated on this lot. The proposed expansion was not completed. A letter of responsibility (LOR) was issued for the Site in 1998, under LOR #98-004. The Site is defined in the LOR as A.P. 56, Lots 5, 273, 316, and 317, and as A.P. 101, Lot 1. The water lot (A.P. 55 Lot 429) is not considered to be part of the Site as defined by RIDEM.



2.3 ENVIRONMENTAL JUSTICE (EJ) FOCUS AREAS

Based on review of information presented in the Environmental Resource map maintained by RIDEM (<http://www.dem.ri.gov/maps/>), the Site is located within the 2022 Draft Environmental Justice Area. Rhode Island Energy acknowledges that the 2022 Environmental Justice Area is draft and will take effect once finalized. Per the Environmental Justice requirements, enhanced public communications are required for projects in these areas. The Site is subject to a Public Involvement Plan (PIP) dated June 9, 2017, which outlines public communication protocols that are currently being performed for the Site which fulfills the requirements of the *Environmental Justice Policy*, Version 1.3, dated September 25, 2023 <https://dem.ri.gov/sites/g/files/xkgbur861/files/2022-06/ridem-environmental-justice-policy.pdf>. Details of the PIP are discussed in Section 2.6. Per the conditions of the PIP, a public notice will be performed upon completion of Site Investigation Activities.

2.4 SOIL MANAGEMENT PLAN

A SMP was established for the Site and submitted to RIDEM on September 12, 2012³ (based in part on the 2009 SMP prepared by VHB and the 2010 SMP prepared by GZA). The SMP established procedures for soil screening/disposal requirements, soil stockpile management and erosion controls, odor controls, dust controls, capping requirements, decontamination protocols equipment leaving the Site, requirements for import of soils, basic dewatering guidelines and management of non-soils (such as asphalt or concrete). The SMP is similar to what would be recorded with an Environmental Land Usage Restriction (ELUR) and has been utilized at the Site for numerous facility projects (such as fence post installation, geotechnical investigation work, utility emergency work, smaller facility projects under previously installed engineered caps, and other critical utility infrastructure work).

Perimeter air monitoring has also been conducted on a project-by-project basis. The following engineered controls were utilized as described in **Appendix G** to control respirable dust and odors as needed during these projects:

- Dust control measures were employed to mitigate the potential for release of airborne particulate matter beyond the limits of the Site perimeter in accordance with RIDEM Air Pollution Control Regulation No. 5, Fugitive Dust. Methods of dust control consisted of sprinkling the ground surface with water and/or calcium chloride, covering of temporary stockpiles and mulching; and
- Odor control measures were employed to mitigate the potential for release of odors beyond the limits of the Site perimeter in accordance with RIDEM Air Pollution Control Regulation No. 17, Odors. Methods of odor control consisted of backfilling excavations and covering stockpiles or excavations with 6-mil polyethylene sheeting.

Each project was restored with an engineered cap. Figure 8 depicts the existing engineered caps and controls located at the Site. Sixty-seven (67) projects have been conducted under the SMP between September 2012 and December 2022. Details regarding these projects is included in **Appendix G**.

2.5 STRAP ACTIVITIES

Several facility projects have been initiated / completed under *STRAPs* approved by RIDEM. The table below provides a summary of these projects. Background of each *STRAP* is provided in Section 4.00.

³ The 2012 SMP will be updated once a Program Letter is received for the Site.



| Project | Figure Ref. | Summary of Project | Regulatory Submittals to RIDEM OLRSM | RIDEM OLRSM Approval Date | Date Work Completed | STRA Completion Report submitted to RIDEM OLRSM |
|-------------------------------|-------------|--|---|--|---------------------------------|---|
| Holder 18/21 Capping Project | 4A / 7 | Capping of 4.63 acres in the Natural Gas Regulating Facility | STRAP – April 27, 2016 STRAP Addendum – May 10, 2016 | May 18, 2016 | August 8, 2016 – March 31, 2017 | April 27, 2017 |
| Dike wall Access Road Project | 4B / 7 | Capping of approximately 39,000 square feet (SF) (0.90 acres) of the Site for a new facility access road for the LNG Facility. | STRAP – June 29, 2016 STRAP Addendum – August 22, 2016 | August 25, 2016 | August 31, 2016 – January 2020 | February 7, 2020 |
| | 4B | Capping of approximately 12,000 SF (0.28 acres) of the Site for a new facility access road for the Holcim Cement Facility. | STRAP Addendum – May 30, 2017 | TNEC tenant chose to not pursue project. Closed. | | |
| Liquefaction Project | 4B | Capping of approximately 3.45 acres of the Site for a liquefaction facility at the LNG Facility. | STRAP – May 12, 2017 | October 27, 2017 | February 2023 | March 21, 2023 |

2.6 PUBLIC INVOLVEMENT PLAN (PIP)

On September 6, 2016, RIDEM informed TNEC that RIDEM OWM received a formal request for development of a PIP with a *PIP Process Initiation Letter*. GZA, on behalf of TNEC, submitted the PIP to RIDEM OWM on October 28, 2016. A revised PIP was submitted to RIDEM on May 4, 2017. After responding to comments issued by RIDEM on June 2, 2017, the PIP was finalized on June 9, 2017. RIDEM issued a *Public Involvement Plan Approval Letter* on June 28, 2017.

Consistent with the Remediation Regulations, and specifically Section 1.8.7, the PIP was prepared to address relevant and applicable requirements of Section 1.8.7 A through D of the Remediation Regulations. Per Section 1.8.7 (Public Involvement), the PIP addresses the following primary elements: 1) Public Notice, 2) Fact Sheets and Enhanced Communication, 3) Community Meetings, and 4) Information Repositories.

RIDEM established a website to serve as a document repository for the Site:
<http://www.dem.ri.gov/programs/wastemanagement/site-remediation/Providence-Gas-Co.php>.

In addition, RI Energy maintains a public document repository at Knight Memorial Library located at 275 Elmwood Avenue, Providence, RI 02907.

The PIP is not intended to apply to projects involving limited subsurface disturbance associated with construction activities or those located in areas previously capped consistent with RIDEM requirements. In addition, this plan does not apply to work



necessary to maintain day-to-day operations at existing facilities or facility emergencies, including repairs and maintenance of the natural gas regulating facility, liquefied natural gas facility, and cement distribution facility. This plan also does not apply to projects involving minor soil disturbances only (e.g., utility work, installation of fence posts, etc.). For these activities, RI Energy will follow the soil and groundwater management procedures for the Site set forth in the September 2012 *SMP*.

3.0 SUMMARY OF ENVIRONMENTAL INVESTIGATIONS (1994 – 2022)

Previous investigations have been performed at the Site by various firms dating back to 1994. These Site investigations have been documented in reports submitted to RIDEM. Investigations included extensive drilling, test pitting, soil sampling and groundwater sampling. The following reports were prepared to present results of Site investigation activities:

- *Site Characterization Report* prepared by RCA on behalf of the PGC dated July 1994;
- *Summary Report – Phase 1A Field Investigations* prepared by RCA on behalf of the PGC dated February 1995;
- *Summary Report – Phase 1B Field Investigations* prepared by RCA on behalf of the PGC dated June 1996;
- *RAWP* prepared by ESS prepared on behalf of the PGC dated December 1998;
- *Subsurface Investigation and Proposed Remediation Algonquin Generator Construction Area* prepared by ESS on behalf of the PGC dated October 1999;
- *Remedial Action Closure Report* prepared by VHB on behalf of the NEGC dated November 2002;
- *SIR* prepared by VHB on behalf of the NEGC dated April 2003; and
- *Oxide Box Waste Summary Memo* prepared by VHB on behalf of TNEC dated January 2009.

A summary of each previously completed investigation effort is included in **Appendix D** (*Summary of Completed Investigations (1994 through 2002)*). For further information related to previous Site investigations, please refer to the reports previously referenced. Please note that sampling depths described in the discussion in **Appendix D** are from the original grades during sampling at the Site. Portions of the Site have been remediated and capped and relative sampling depths are unknown. Additionally, the discussion of environmental impacts presented herein pertains only to material remaining at the Site following remedial activities based on GZA's review of available information.

As part of the SIR, GZA reviewed data presented in these previous reports and identified data gaps. The following sections describe the Supplemental Site Investigation program that was completed at the Site between 2014-2016, annual groundwater monitoring rounds, and monitoring well replacement activities.

3.1 SUPPLEMENTAL SITE INVESTIGATION PROGRAM AND RESULTS (2014-2016)

The primary project objective of the Supplemental Site Investigation (Supplemental SI) program performed by GZA was to collect additional subsurface information to address identified data gaps and to support the development of an applicable and appropriate remedial strategy for the Site.

SCOPE OF WORK



The scope of the *SSI/WP* was completed between May 2014^{4,5} and December 2016 and consisted of the tasks described below.

- Performance of twenty-six (26) additional soil borings across the Site to further characterize the nature and extent of previously identified soil and groundwater impacts. Twenty-three (23) of the soil borings were completed as groundwater monitoring wells. Soil samples were collected continuously during the performance of the borings. The samples were collected for soil classification, observation for the presence of environmental impacts, and field-screening. Select surface (defined herein as collected at a depth of between 0 and 2 feet bgs) and/or subsurface (defined herein as collected at a depth of greater than 2 feet bgs) soil samples (nineteen (19) samples and two (2) blind duplicates) from the explorations were also submitted for analytical testing for volatile organic compounds (VOCs) using EPA Method 8260, total petroleum hydrocarbons (TPH) using EPA Method 8100M, PAHs using EPA Method 8270, and EPA 13 Priority Pollutant Metals (PP-13 Metals) using EPA Methods 6010B and 7471A. Select subsurface soil samples were also submitted for TPH fingerprinting analysis using a modified EPA Method 8015B. The majority of subsurface soil samples were collected from the vadose zone (above the water table).
- Performance of four (4) soil borings (performed via soil vacuum excavation) in the Former Oxide Box Area to further characterize the nature and extent of previously identified soil impacts. Soil samples were collected from the sidewalls of these borings. The samples were collected for soil classification, observation for the presence of environmental impacts, and field-screening. Select surface and subsurface soil samples (four (4) samples and one (1) blind duplicate) from the explorations were also submitted for analytical testing for VOCs using EPA Method 8260, TPH using EPA Method 8100M, semi-volatile organic compounds (SVOCs) using EPA Method 8270, RCRA-8 Metals using EPA Methods 6010B and 7471A, toxicity characteristic leaching procedure (TCLP) Lead via EPA Method 1311, polychlorinated biphenyls (PCBs) using EPA Method 8082 and reactivity. Each subsurface soil sample was collected from the vadose zone (above the water table).
- Performance of one (1) test pit explorations to further characterize the extent of NAPL impacts proximate to RCA-21. Soil samples were collected during the performance of the test pits for classification, observation for the presence of environmental impacts, and field-screening. A recovery well (RW-1) was installed to replace RCA-21.
- Collection of ten (10) surficial soil samples to further characterize lead impacts proximate to Former Gasholders that were located on Site. The samples were submitted for analytical testing for lead using EPA Method 6010B and TCLP lead via EPA Method 1311. Additionally, one (1) blind duplicate sample was submitted for analysis of lead using EPA Method 6010B and TCLP lead via EPA Method 1311. Five (5) of the ten (10) surficial soil samples were submitted for analysis of Synthetic Precipitation Leaching Procedure (SPLP) lead via EPA Method 1311.

⁴ In accordance with Section 1.8.7 of the *Remediation Regulations*, GZA identified and subsequently provided notifications to the abutting property owners, tenants and easement holders that environmental investigations were being performed at the Site. The abutter notifications were sent out on May 13, 2014. A list of abutting Site property owners and a copy of the notification has been provided to RIDEM and is attached as Appendix J (*May 13, 2014 Abutter Notification*).

⁵ As indicated on Figures 3A and 3B, portions of the Site are within 200-feet of a coastal feature (the Providence River), and as such, the Supplemental SI activities were subject to the jurisdiction of the CRMC. To address CRMC requirements, GZA prepared an April 7, 2014 "Finding of No Significant Impact" (FONSI) application associated with the performance of the Supplemental SI program, as outlined in February 2014 *SSI/WP*. In response to our application, the CRMC issued an April 8, 2014 FONSI (F2014-04-022) that stipulated project work must be completed within 3-years. A copy of the CRMC permit is provided in Appendix K (*CRMC Permit F2014-04-022 – Site Investigation Activities*).



- Collection of seven (7) trip blank soil samples. Each trip blank sample was submitted for analysis of VOCs using EPA Method 8260B.
- Collection of forty (40) groundwater samples from seventeen (17) existing monitoring wells and twenty-three (23) newly installed monitoring wells in August 2014. Prior to sampling, the wells were evaluated for the presence of LNAPL and DNAPL using an electronic oil/water interface probe. Groundwater samples were submitted for analysis of VOCs using EPA Method 8260B. Additionally, two (2) blind duplicates and three (3) trip blanks were submitted for analysis of VOCs using EPA Method 8260B.
- Collection of twenty-one (21) groundwater samples in October 2015. Prior to sampling, the wells were evaluated for the presence of LNAPL and DNAPL using an electronic oil/water interface probe. Groundwater samples were analyzed for VOCs using EPA Method 8260B. Additionally, two (2) blind duplicates and two (2) trip blanks were submitted for analysis of VOCs using EPA Method 8260B.
- Collection of twenty-one (21) groundwater samples in May 2016. Prior to sampling, the wells were evaluated for the presence of LNAPL and DNAPL using an electronic oil/water interface probe. Groundwater samples were analyzed for VOCs using EPA Method 8260B. Additionally, two (2) blind duplicates and two (2) trip blanks were submitted for analysis of VOCs using EPA Method 8260B.
- Collection of periodic (at least semi-annually) depth to groundwater and NAPL measurements of the wells, with NAPL recovery evaluations (if detected).
- Periodic observations of the riverfront area for the presence of sheens or other evidence of impact. These observations were conducted on an approximate monthly basis.
- Preparation of this *SIR Addendum* which summarizes the recently collected data and previously collected data in reference to data gaps.

3.1.1 DATA GAPS

The following data gaps were identified based on a review of the findings of the reports referenced previously and remedial actions performed to date. The scope of work presented above was designed to specifically address these data gaps.

SITE PERIMETER

Limited investigations have been completed along the northern and western property line / Site boundary. Those that have been performed consist primarily of shallow Geoprobe® borings (completed to the depth of the observed water table). Additional investigations are required to further evaluate the lateral and/or vertical extent of impacts. NAPL has been observed at certain locations along the property line (for example, CB-01, CB-02 and MH-01; refer to Figure 5A) that are not consistent with historical use and/or on-Site groundwater flow patterns. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of impacts in this area. A comprehensive evaluation of data collected in this area is presented below.

DRAINAGE REHABILITATION AREA

As described below, sheen / product was identified in catch basin structures and the conveyance piping servicing the northwestern portion of the Site. Results of forensic testing indicated that the sheen was determined to be comprised of complex mixtures of variably weathered petroleum, with the major component being “middle distillate petroleum” (i.e., diesel fuel, or #2 fuel oil). The source of this sheen / product is unknown. NAPL has not been historically detected in nearby monitoring wells (RCA-1 or VHB-1), which are located directly to the south of the catch basin structures and the conveyance piping.



Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of impacts in this area. A comprehensive evaluation of data collected in this area is presented below.

NATURAL GAS LEAK REPAIR AREA

As described below, sheen was observed in the excavation associated with the natural gas piping repair proximate to the Former Booster House; refer to Figure 5A. The sheen was identified to be comprised of “primarily heavy middle distillate” (e.g., cutting oil, light lubricating oil, or gear oil), with low levels of pyrogenic PAHs. The source of this sheen is unknown. The investigations performed to date may not fully characterize the extent of NAPL in this portion of the Site. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of impacts in this area. A comprehensive evaluation of data collected in this area is presented below.

LEAD UCLS

Four surface soil samples collected directly proximate to Former Gasholders Nos. 18 and 21 exceeded the total lead RIDEM Upper Concentration Limits (UCL) of 10,000 mg/kg. The location of the two Gasholders is shown on Figure 5A. The two Gasholders were decommissioned and demolished in 2010, as documented in the July 2010 *Construction Completion Report for Decommissioning and Demolition of Gasholders #18 and #21, Allens Avenue, Former MGP, Providence, Rhode Island* prepared by Brown and Caldwell on behalf of TNEC, as described below. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of impacts in this area. A comprehensive evaluation of data collected in this area is presented below.

COVE AREA

Limited investigations have been completed along the cove that is proximate to the northern portion of the Site. The investigations which have been completed were primarily shallow Geoprobe® borings (typically less than 10 feet in depth) and may not have fully vertically delineated the extent of impacts. Sheen observations have been observed at mid and low tide since at least 1996 (as documented in the 1996 *Phase II Field Characterization Investigation*, as referenced above). The cove is directly proximate to an area referred to as the “seep area”. In 1996, several remedial actions were completed in the area to address the source of the sheens, as documented in the 1996 *Phase II Field Characterization Investigation* prepared by RCA and in 2002 as documented in the November 2002 *Remedial Action Closure Report* prepared by VHB. These remedial actions included the completion of significant excavation upland of the “seep area” to address Former historical structures and potential sources of the observed sheens in the cove area. This area of the Site had several active MGP structures from 1910 to at least 1954.

As documented in the annual groundwater monitoring reports since 2011, sheens, generally consisting of bright bands, are generally observed in the area of the cove between the corresponding upland locations of CHES RW-3 and CHES RW-5 (refer to Figure 5B). GZA inspects the area of the cove for sheens at least once per month and GZA inspected the cove daily during the Fields Point Liquefaction Project. Based on GZA’s observations, sheens are generally observed at mid to low tide each day. In June 2013, a sheen sample was collected by GZA personnel during a monitoring event and was submitted to New Fields Analytical Laboratory of Rockland, Massachusetts for fingerprint analysis. Results identified the sheen sample as “mixed petroleum oil tar and parking lot runoff.” The laboratory report from New Fields Laboratory is included in **Appendix O** (noted as June 26, 2013 New Fields Chemical Fingerprinting Summary Letter and Analytical Report).

As noted in the August 2013 *Groundwater Monitoring Report* prepared by GZA on behalf of TNEC, LNAPL has only been detected in CHES RW-4 in trace to 0.03 feet thickness; this recovery well is located in the area between CHES RW-2 and CHES RW-5. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of impacts in this area. A comprehensive evaluation of data collected in this area is presented below.

OXIDE BOX AREA



VHB on behalf of TNEC submitted to RIDEM a memo entitled *Oxide Box Waste Summary Memo* presenting a summary of investigations performed in the area, analytical testing results and recommended remedial approach for the former oxide box area located in the southern portion of the natural gas regulating facility (immediately east of the former gasholders). GZA performed additional investigation to supplement the January 2009 investigation performed by VHB. As part of the investigation, certain soil samples collected from the test pits were analyzed for various disposal parameters. The remedial approach recommended by VHB included excavation of the upper 1 foot of surface soil within the entire former oxide box area, excavation of a localized area of subsurface soil where impacts above the GB Leachability Criteria were detected (i.e., sample location B-08), and backfilling the deeper excavation with material from the Material Handling Area (MHA) stockpile. Following placement of the MHA material as backfill to approximately 1 foot below grade, a geotextile would be placed in the excavation area and the remaining excavation would then be backfilled to grade with clean off-Site imported fill. It was estimated that approximately 1,730 CY or 2,700 tons of excavated soil would require off-Site transport and disposal at a licensed receiving facility. VHB stated that based on reactive cyanide and reactive sulfide testing of soil sample VHB-TP102(6'), the soil generated during the proposed remedial efforts would likely be accepted by ESMI of Loudon, New Hampshire for thermal desorption. It should be noted that this soil sample was characterized as a "black sand with a strong MGP-like odor" and exhibited a total volatile organic compounds (TVOC) headspace screening of greater than 2,500 parts per million by volume (ppmv). No evidence of blue and/or green staining was noted in this sample; however, observations of "dark green... gray/blue stained... wood chips" was noted in soil samples from the proposed deeper excavation area by VHB. Given the nature of the material proposed to be excavated for off-Site disposal, the existing analytical data may not fully characterize the material for disposal at ESMI. As such, supplemental characterization is proposed in order to further assess excavation volumes and soil management options. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of impacts in this area. A comprehensive evaluation of data collected in this area is presented below.

MONITORING WELL RCA-3

Monitoring well RCA-3 is located in the north-central portion of the Site proximate to the cove, as shown on Figure 4B. Dense Non-Aqueous Phase Liquid (DNAPL) was identified in RCA-3 during 2011, 2012 and 2013 in trace amounts. The existing monitoring well may not characterize the vertical extent of DNAPL in the area. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of impacts in this area. A comprehensive evaluation of data collected in this area is presented below.

MONITORING WELL RCA-21 LNAPL

Monitoring well RCA-21 is located on the LNG portion of the property, as shown on Figure 5B. RCA-21 was installed in 1996 by RCA as part of the Phase 1B Site Investigation activities. Remedial activities were completed in this area during 2001 and are documented in the November 2002 *Remedial Action Closure Report* prepared by VHB. LNAPL was detected in thickness ranging from 0.07 to 3.58 feet between 2011 and 2014. Monthly field monitoring visits performed between 2011 and 2014 that Light Non-Aqueous Phase Liquids (LNAPL) at this well was readily recoverable, suggesting a possible localized source. According to historical plans for the Site, RCA-21 was not located within the footprint of any existing structures. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of impacts in this area. A comprehensive evaluation of data collected in this area is presented below.

DEEPER SITE INVESTIGATION

In general, environmental explorations completed at the Site have generally been shallow, extending to depths of approximately the water table (generally 4 to 8 feet bgs). As such, information pertaining to the vertical extent of impacts in some areas of the Site is limited. Of note, several monitoring wells were installed by VHB in 2002 in borings that may have not fully characterized the vertical extent of potential impacts. These include borings/wells VHB-1 (near CB-01), VHB-7 (northwest of LNG operations buildings), VHB-10 (southwest of Former Gasholder No. 18) and VHB-21 (proximate to the natural gas regulator), as shown on Figure 5A. Review of the boring logs at each of these locations indicates that the presence of "strong" odors and/or



“separate phase product, oil saturated” soil conditions at the bottom of the borings (ranging in depths from 12 to 14 feet). Based on these observations, supplemental test borings/monitoring wells are recommended to assess and delineate the vertical extent of impacts at these three locations.

In addition, several rounds of geotechnical borings have been completed for various project upgrades in the eastern portion of the Site. The logs were reviewed for general indicators of environmental impacts. Several locations were identified with possible impacts at depth: proximate to RCA-3, proximate to the Former Compressor Building No. 1 near VHB -7, proximate to the LNG vaporizer building near ESS RW-3, 4, 5, and 6 and proximate to the LNG generator area near VHB-20; refer to Figure 5A. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of deeper impacts. A comprehensive evaluation of data collected in this area is presented below.

3.1.2 SOIL AND GROUNDWATER EXPLORATION PROGRAM

The following sections describe the exploration and analytical testing program completed between 2014 and 2016. This field program involved the completion of thirty (30) soil borings (26 drive and wash and 4 vacuum excavation), with twenty-three (23) of the borings completed as groundwater monitoring wells to evaluate groundwater quality and the presence of NAPL. This investigation program also included the performance of one (1) test pit and the collection of ten (10) surficial soil samples. Samples collected below 2 feet bgs are referred to as subsurface soils. Exploration locations are shown on Figures 5A and 5B.

This section presents GZA’s interpretation of the data in terms of the nature and extent of impact, including the distribution of RIDEM Method 1 exceedances. This exceedance comparison considered the current environmental setting and use of the property. Under current and foreseeable future conditions, the Site would likely continue operation as an industrial facility owned by TNEC (industrial/commercial use). Accordingly, the data were compared to the RIDEM Method 1 GB Groundwater Objectives, the GB-Leachability Criteria, and the I/C-DEC. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons described below and summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Soil and groundwater samples were also collected and analyzed during the investigation program in accordance with the February 2014 *SSIWP*. The explorations and the analytical testing program were designed to investigate the data gaps described above. For a comprehensive summary of quantitative analytical testing results and measurements collected during the Supplemental SI study, please refer to the attached Tables 1 through 12.

Note that groundwater analytical data was included in previous groundwater monitoring reports submitted to RIDEM. Please refer to those reports for more information (see Section 1.00 for listing).

SOIL BORINGS AND FIELD SCREENING

In 2014, GZA observed the installation of thirty (30) soil test borings by Geologic Earth Exploration, Inc. of Norfolk, Massachusetts. The majority of the soil borings were advanced using cased (wash and drive) drilling techniques. In addition, each of the borings were initially advanced using vacuum excavation to depths of approximately 6 feet bgs or the water table for utility clearance purposes. Four (4) borings were advanced using vacuum excavation only (GZ-321S to GZ-324S).

All soil borings extended to 30 to 36 feet bgs, with the exception of certain shallow (*i.e.*, GZ-316D, GZ-317D, and GZ-321S to GZ-324S). Refusal was encountered at depths of 6.5 feet bgs and 5.5 feet bgs, respectively, at borings GZ-316D and GZ-317D. GZ-321S to GZ-324S were completed to collect additional subsurface soil samples only. The deep multi-level borings (identified with a “D” suffix to the boring identification number) extended to at least 10 feet into “clean soils”⁶. The shallow multi-level borings were identified with an “S” suffix to the boring identification number. Soil samples were obtained continuously during the

⁶ “Clean soils” for the purposes of this report were defined as the lack of visual and/or olfactory observations and/or field screening results.



advancement of the borings⁷ at approximately 2-foot intervals with a 2-inch split-spoon sampler and a 140-pound hammer. Groundwater monitoring wells were installed in twenty-three (23) of the thirty (30) borings as described below.

A GZA field engineer was present during all exploration activities to coordinate and document subsurface conditions, classify soils, prepare boring logs, field-screen soil samples and collect/prepare samples for laboratory testing. Visual observations of impacted soils were noted on the boring logs in accordance with the following soil classification key:

Sheen - Iridescent petroleum-like sheen.

Stained - Used with color (*i.e.*, black or brown stained) to indicate that the soil matrix is stained a color other than the natural (non-impacted) color.

Coated - Soil grains are coated with free product however there is not sufficient free phase material present to saturate the pore spaces.

Blebs - Discrete sphericals of free product were observed but for the most part the soil matrix was not visibly contaminated or saturated. Typically, this is residual product.

Saturated - The entirety of the pore space of a sample occupied by free product (rather than groundwater). Depending on viscosity, free phase saturated materials may freely drain from a soil sample.

Petroleum or Oil - Used to characterize free and/or residual product that exhibits a distinct fuel oil or diesel fuel-like odor.

Tar - Used to describe free and/or residual product that exhibits a distinct "coal tar" type odor (*e.g.*, naphthalene-like odor). Weathered tars may not exhibit an odor and are identified on a visual basis. Colors of product can be brown, black, reddish-brown, or gold.

Solid Tar - Used to describe product that is solid or semi-solid phase. The magnitude of the observed solid tar is described (*e.g.*, discrete granules or a solid layer) in the boring logs.

Purifier Material- Purifier materials are commonly identified by their distinctive blue/green color. Other colors may be present including indigo (deep blue) or brown/rust. Typically purifier materials contain wood chips, oyster or clam shells or granular material. The material may have a distinctive sulfur-like odor when freshly exposed to air.

Coal Ash /Clinker - Odorless, grey or black in color. Clinker may exhibit glazing.

GZA personnel photo-documented the soil within each split spoon sampler during the advancement of each boring. Copies of the photos have not been included as an appendix to this report but can be provided upon request. Please refer to the boring logs attached in **Appendix L (GZA 2014 Exploration Logs)** for a description of subsurface conditions and monitoring well construction details.

The soil from each sampling interval was placed in clean, 8-ounce glass jars. Soil samples for VOC analysis were placed in 40 milliliter (ml), methanol-preserved glass vials with septa caps. All recovered soil samples were stored in a cooler with ice and transported under chain-of-custody protocols to ESS Laboratory in Cranston, Rhode Island. Soil samples not selected for laboratory analysis were stored in a freezer by ESS Laboratory for potential subsequent analysis and/or disposal.

All soil samples recovered during the program were screened in the field for TVOCs with a MiniRAE Photo-Ionization Detector (PID) equipped with a 10.6 eV lamp and jar-head space technique prior to placing on ice. The MiniRAE PID measures relative levels of

⁷ Soil samples were not collected from the shallow wells adjacent to deep groundwater monitoring wells RCA-12R, GZ-302S, GZ-303S, GZ-312S, and GZ-314S since soil samples were collected continuously during the advancement of the deep wells.



TVOCs referenced to an isobutylene in-air-standard. Although the PID screening cannot be directly used to quantify VOC concentrations or to identify individual compounds, the results can serve as a relative indicator of VOC levels. The TVOC screening results are provided on the boring logs in **Appendix L**.

Upon achieving the desired depth, each boring (not slated for monitoring well installation) was backfilled with clean drill cuttings and/or clean filter sand to a depth approximately coincident with the existing ground surface.

Drilling equipment was decontaminated between each test boring within a dedicated decontamination area located to the northeast of Former Compressor House No.2. Wash water (*i.e.*, decontamination water), excess drilling water and soil cuttings generated during drilling were placed into 55-gallon drums for subsequent off-Site disposal. The resulting drums were labeled and temporarily stored on-Site. All investigation derived wastes (IDWs) were transported off-Site by Clean Harbors Environmental Services (CHES) to their facility in Braintree, Massachusetts.

SOIL SAMPLE LABORATORY ANALYSES

Soil samples were collected from each boring exploration for potential analytical testing. Nineteen (19) subsurface soil samples were submitted for laboratory testing from the soil borings during this supplemental investigation program. Additionally, two (2) blind duplicates were submitted for analysis. Soil samples were submitted for laboratory analysis for VOCs using EPA Method 8260, TPH using EPA Method 8100M, PAHs using EPA Method 8270, PP13 Metals using EPA Methods 6010B and 7471A, and total cyanide using EPA Method 9010C. In accordance with the February 2014 *SSIWP*, soil samples were selected for laboratory analysis based on field screening results, visual observations and gaps in the analytical database. The samples were collected in non-preserved 8 oz. glass containers with Teflon lids as well as in 40-ml methanol-preserved glass vials with septa caps. All soil samples were packed in an ice chest and transported under chain-of-custody protocol to ESS Laboratory in Cranston, RI. A copy of the soil boring analytical results and chain-of-custody forms are presented in **Appendix M** (*Laboratory Report – Soil Samples*) and the analytical results are summarized in Table 1 (*Summary of Soil VOC Analytical Results*), Table 2 (*Summary of Soil TPH, PAHs and Inorganic Analytical Results*), Table 7 (*Summary of Soil QA/QC VOC Analytical Results*) and Table 8 (*Summary of Soil QA/QC TPH, SVOCs, PCBs and Inorganics Analytical Results*).

Four (4) soil samples were submitted from the vacuum excavated soil borings completed in the Oxide Box Area to further characterize the subsurface soils in this area. Additionally, one (1) blind duplicate was submitted for analysis. Soil samples were submitted for laboratory analysis for VOCs using EPA Method 8260, TPH using EPA Method 8100M, SVOCs using EPA Method 8270, RCRA-8 Metals using EPA Methods 6010B and 7471A, PCBs using EPA Method 8082A, TCLP Lead via EPA Method 1311 and total cyanide using EPA Method 9010C. In accordance with the February 2014 *SSIWP*, soil samples were selected for laboratory analysis based on field screening results, visual observations and data gaps in the analytical database. The samples were collected in non-preserved 8 oz. glass containers with Teflon lids as well as in 40-ml methanol-preserved glass vials with septa caps. All soil samples were packed in an ice chest and transported under chain-of-custody protocol to ESS Laboratory in Cranston, RI. A copy of the soil boring analytical results and chain-of-custody forms are presented in **Appendix M** (*Laboratory Report – Soil Samples*) and the analytical results are summarized in Table 5 (*Summary of Oxide Box Soil VOC Analytical Results*), Table 6 (*Summary of Oxide Box Soil TPH, PAHs and Inorganic Analytical Results*), Table 7 (*Summary of Soil QA/QC VOC Analytical Results*) and Table 8 (*Summary of Soil QA/QC TPH, SVOCs, PCBs and Inorganics Analytical Results*).

Thirteen (13) soil samples were submitted from explorations on Site for analysis of TPH fingerprint via EPA Method 8015B. In accordance with the February 2014 *SSIWP*, soil samples were selected for laboratory analysis based on field screening results, visual observations and data gaps in the analytical database. The samples were collected in non-preserved 8 oz. glass containers with Teflon lids. All soil samples were packed in an ice chest and transported under chain-of-custody protocol to Alpha Analytical Laboratory in Mansfield, MA. A modified EPA Method 8015B gas chromatography method was used to determine the total petroleum hydrocarbon (TPH) concentration ($C_8 - C_{44}$). A high-resolution gas chromatogram produced by this method provides a detailed “fingerprint” of the hydrocarbons that compose samples. This analysis allowed for the characterization of the general boiling range(s) and type(s) of petroleum or other hydrocarbons present in the samples, as well



as the degree(s) of weathering a fugitive product has undergone in the environment. New Fields Laboratory (New Fields) presented and discussed the results in their July 24, 2014 Chemical Fingerprinting Summary Letter and Analytical Report. The letter also included the analytical results and chain-of-custody forms. The July 24, 2014 Letter is included in **Appendix O** (*New Fields Chemical Fingerprinting Results*). The analytical results are summarized in Table 3 (*Summary of Soil TPH Fingerprinting Results*).

Quality control and quality assurance (QA/QC) samples were also collected and analyzed during the Supplemental SI program. These QA/QC procedures and samples are summarized in Section 3.1.3 and **Appendix N** (*Summary of Soil and Groundwater QA/QC Results*). The QA/QC results are summarized in Table 7 (*Summary of Soil QA/QC VOC Analytical Results*) and Table 8 (*Summary of Soil QA/QC TPH, SVOCs, PCBs and Inorganics Analytical Results*).

MONITORING WELL INSTALLATIONS

Twenty-three (23) new monitoring wells were installed during the Supplemental SI program to further investigate data gaps and further evaluate groundwater quality and the nature and extent of NAPL at the Site. The shallow and deep wells were constructed of 2-inch Schedule 40 PVC in accordance with the standards specified in Appendix 1 of the RIDEM Groundwater Quality Regulations. Ten (10) of the wells consisted of shallow wells with screens set to span the natural water table encountered during drilling (typically within the fill unit). The remaining thirteen (13) wells consisted of deep wells extended into “clean soils”, equipped with a 10-foot screen section set near the bottom of the boring at least 30 feet bgs. For both the deep and shallow wells, a sand filter pack was installed in the annular space around the well screen and extended approximately 1 foot above the well screen. The well screen lengths of the water table wells varied from approximately 10 to 15 feet. An approximate 1-foot (minimum) bentonite seal was placed above the filter pack. The remaining borehole above the bentonite was backfilled with clean native drill cuttings (when encountered) or clean filter sand. No impacted soil was used as backfill to construct the monitoring wells. A concrete surficial seal with an approximate 3-foot long, steel protective casing or a protective road box was installed to protect the wells. No glue or cement was used in the construction of any of the wells. For additional detail, please refer to the boring/well installation logs in **Appendix L** (*GZA 2014 Exploration Logs*).

Upon completion of the monitoring well installations, the wells were allowed to stabilize over a minimum 1-week period prior to well development. Well development activities were completed between June 13th and 16th, 2014. The newly installed wells and all available pre-existing wells that were sampled during the June 2014 sampling round were developed to remove sediment build-up. This process was performed by surging a bailer repeatedly the length of the well screen followed by the removal of at least ten (10) standing water column volumes or the removal of water added during drilling. Groundwater was removed via a combination of bailing and pumping techniques. During development, GZA monitored the turbidity of the extracted water to evaluate the effectiveness of the development activities. Well development continued until the water quality was reasonably non-turbid or until the minimum purge volume was achieved. A summary of these results is included in the 2014-2017 monitoring report.

All development water was collected in 55-gallon drums for subsequent off-Site disposal. The drummed purge water was transported off-Site for appropriate disposal by CHES at their Braintree, Massachusetts facility. Copies of shipping records are included in the 2014 – 2017 Monitoring Report dated January 2021.

TEST PITTING

On June 17, 2014, GZA observed the performance of a test pit (TP-301) by CHES with the objective of further characterizing the extent of LNAPL at monitoring well RCA-21 (shown on Figure 5B). The test pit was performed with a track-mounted excavator and extended to a depth of approximately 13 feet bgs, with an approximate area of 50 SF. Prior to the performance of the test pit, temporary erosion control measures consisting of straw wattles were installed on the topographic downgradient side. The excavated soil was temporarily staged adjacent to the excavation on two layers of poly sheeting for subsequent re-use as backfill.



A recovery well was installed in TP-301. The recovery well consisted of 12-inch diameter high density polyethylene (HDPE) pipe set at approximately 13 feet bgs, with a 5-foot perforated screen section set between 8 and 13 feet bgs and non-perforated HDPE pipe set from 8 feet bgs to 2 feet above ground surface. The recovery well was backfilled around the perforated screen section with ¾-inch crushed stone and the excavated soil was subsequently used to backfill the test pit in approximately the same sequence as removed; that is, the last material removed was the first material replaced. The backfill was compacted with the bucket of the excavator in successive lifts.

The bucket of the excavator was decontaminated prior to leaving the Site within the previously discussed dedicated decontamination area. The decontamination water was collected and transferred into a 55-gallon drum. All IDW was transported off-Site by CHES to their facility in Braintree, Massachusetts, or another certified facility. Copies of shipping records for the IDWs were included in the 2014-2017 Monitoring Report.

A GZA field engineer was present during the test pit to document subsurface conditions, classify soils, prepare a test pit log, and field-screen soil samples. Soils classification and field screening was conducted in the same manner as described above. The test pit log associated with TP-301 is included in **Appendix L** (*GZA 2014 Exploration Logs*).

SURFACE SOIL SAMPLING AND LABORATORY ANALYSIS

On July 1, 2014, GZA collected ten (10) surface soil samples (SS-301 through SS-310) to investigate a data gap in the Former Gasholder area. The surface soil samples were collected using a shovel from the upper 1 foot of soil (0-1 feet). The shovel was decontaminated between each sampling location using a mixture of deionized (DI) water and Alconox, followed by a rinsing with clean deionized water. A summary table in **Appendix L** (*GZA 2014 Exploration Logs*) summarizes the surface soil sampling information for the SS-300 series completed by GZA, including sample description, location and observations of olfactory and/or visual evidence of impacts, which was conducted in the same manner as described above.

Each surface sample from the SS-300 series was submitted for laboratory analysis for total lead using EPA Method 6010B and TCLP lead using EPA Method 1311. Additional soil was collected from five (5) of the surface soil sample locations in July 2015 for analysis of SPLP lead using EPA Method 1311. The samples were collected in non-preserved 8 oz. glass containers with Teflon lids. All soil samples were packed in an ice chest and transported under chain-of-custody protocol to ESS Laboratory. A copy of the analytical results and chain-of-custody forms are presented in **Appendix M** (*Laboratory Reports – Soil Samples*) and Table 4 (*Summary of Surface Soil Sampling Lead Sampling*).

Quality control and quality assurance (QA/QC) samples were also collected and analyzed during the Supplemental SI program. These QA/QC procedures and samples are summarized in Section 3.1.3 and **Appendix N**. The QA/QC results are summarized in Table 8 (*Summary of Soil QA/QC TPH, SVOCs, PCBs and Inorganics Analytical Results*).

GROUNDWATER DEPTHS AND ELEVATIONS

Following completion of the well installations in June 2014, GZA recorded periodic depth to groundwater readings in each of the available monitoring wells using an electronic water level indicator. GZA also surveyed the vertical elevation of the top of the PVC well casing and adjacent ground surface for each new and existing well relative to the North American Vertical Datum of 1988 (NAVD 1988). These depths to groundwater readings and reference elevations were used to calculate the elevation of the groundwater table at each well location. Monitoring well reference elevation and depth to groundwater measurements are presented in Table 9, *Summary of Groundwater and NAPL Gauging Results*. Table 9 also includes groundwater elevation data collected by GZA since July 2011 during initial assessment of well conditions at the Site.

NAPL GAUGING AND RECOVERY

During the groundwater gauging events completed by GZA since July 2011, measurements of the presence and thickness of NAPL were also recorded. NAPL measurements were gauged using an oil-water interface probe. To gauge the presence of



LNAPL, the probe was lowered into the well until the probe's continuous alarm indicated the presence of LNAPL. When the probe passes through the product into groundwater, an intermittent alarm is triggered. This information was used to gauge the thickness of LNAPL. Gauging for the presence of DNAPL was conducted in the same manner as the LNAPL. Once the continuous alarm of the interface probe was heard, measurements were taken to the bottom of the well to record product thickness. Due to the material's physical properties, an accurate assessment of NAPL thickness is typically difficult and this method of measurement likely leads to an overestimation of both LNAPL and DNAPL thicknesses.

Between July 2011 and December 2022, LNAPL was present in seventeen (17) monitoring wells ranging from a trace/sheen (<0.01 feet) up to 3.58 feet of product in well RCA-21⁸. DNAPL was encountered in one (1) monitoring well (RCA-3) in trace amounts only. The results of these NAPL gauging activities are summarized in Table 10 (*Historical LNAPL Well Gauging Data*), and Table 11 (*Historical DNAPL Well Gauging Data*). These are estimated thicknesses of NAPL in the wells, which may not be reflective of actual subsurface conditions.

Between July 2011 and December 2022, an evaluation of NAPL recoverability was also made at a subset of the wells where NAPL was present (RCA-21 and RCA-29). LNAPL recovery was performed with a peristaltic pump with dedicated tubing positioned directly below the top of the LNAPL surface. The LNAPL was extracted from the well until groundwater was observed within the tubing at which point the pump was deactivated. The recovery of the LNAPL was then monitored with an oil/water interface probe. A summary of these results is included in the groundwater monitoring reports; see Section 1.00 for list of reports.

Any recovered LNAPL was collected and containerized in labeled 55-gallon drums for off-Site disposal. All IDW was transported off-Site by CHES to their facility in Braintree, Massachusetts, or another certified facility. Copies of shipping records for the IDWs generated during the Supplemental SI program were included in the groundwater monitoring reports; see Section 1.00 for list of reports.

GROUNDWATER SAMPLING AND ANALYSIS

Between 2014 and 2016, the groundwater monitoring well network consisted of seventy-four (74) groundwater monitoring wells (51 existing wells and 23 new wells). Three rounds of groundwater samples were collected from the monitoring well network as part of this Supplemental SI investigations. The first groundwater sampling round was performed between June 16th and 20th, 2015 and included the collection of groundwater samples from forty (40) monitoring wells (twenty-three (23) samples from newly installed monitoring wells and seventeen (17) samples from existing monitoring wells). The second groundwater sampling round was performed between October 14th and 19th, 2015 and included the collection of twenty-one (21) groundwater samples. The third groundwater sampling round was performed between May 18th and 21st, 2016 and included the collection of twenty-one (21) groundwater samples.

Groundwater samples were collected in general accordance with EPA's January 19, 2010 *Low Stress (low flow) Purging and Sampling Procedure* (Low Flow SOP). Prior to sampling, the depth to static groundwater and NAPL present was measured in each well using an ORS electronic oil/water interface probe. During groundwater sampling, a variable speed peristaltic pump was utilized to control the rate of purging. Dedicated 1/4-inch polyethylene tubing installed in each of the wells was utilized as the intake and discharge tubing for the pump. This tubing has the potential to become brittle when exposed to UV light (sunlight) and where necessary this tubing was replaced with new dedicated tubing as indicated on the field sampling logs. Groundwater sampling logs are included in the 2014-2017 Monitoring Report. Pharmaceutical grade tubing was utilized as the pump head tubing and connected to the intake and discharge tubing by clamps sufficient to prevent the introduction of air into the sample. If NAPL was noted in the monitoring well prior to sampling, new tubing was installed in the monitoring well. In order to limit the potential for LNAPL to enter the sampling tubing during the collection of the sample, a peristaltic pump was used to force air

⁸ LNAPL thicknesses present in RCA-21 was considered a data gap for the Site. As part of the 2014 investigation activities, a test pit was conducted at the location and a recovery well was installed to aid in LNAPL recovery. Additional information is presented in Section 3.1.8.8.



through the tubing as it passed through the LNAPL/groundwater interface. If DNAPL was noted in the well, the sampling tubing was installed in these wells carefully so that the DNAPL layer was not intercepted.

During sampling, field readings were recorded for pH, temperature, specific conductance, oxidation reduction potential (ORP) and dissolved oxygen (DO) using a YSI Professional Plus® portable water quality meter with a flow-through cell. A LaMotte Turbidimeter® was used to monitor the turbidity. These field readings are presented in the field sampling logs, attached to the 2014-2017 Monitoring Report. As indicated on the logs, the monitoring wells were pumped until field screening parameters were stabilized prior to collecting the samples.

Samples were placed in laboratory-provided, hydrochloric acid-preserved 40 mL glass vials with septa caps for VOC analysis via EPA Method 8260B. Samples were then packed in an ice chest and transported under chain-of-custody protocol to ESS Laboratory located in Cranston, Rhode Island. A summary of these results is included in the 2014-2017 groundwater monitoring report.

SHEEN / WATERFRONT OBSERVATIONS (2012-2022)

GZA has been performing periodic inspections of conditions along the cove area adjacent to the Site along the Providence River since 2012. During these periodic inspections, we have made observations as to the presence of sheens along the shoreline. Most of the inspections were performed at, or close to, low tide. However, some of the inspections were performed during other stages of the tidal cycles to evaluate conditions throughout the cycle. Sheen observations from 2012 through 2022 were documented in annual groundwater sampling reports submitted to RIDEM (see **Appendix E**). Table 12 presents the sheen / waterfront observations observed by GZA between 2012 and 2022.

3.1.3 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES AND SAMPLES

All sample collection, handling, storage, field screening methods, transportation, and analyses were conducted in general accordance with the *SSIWP* to ensure that results are accurate and representative. In addition and as described below, in accordance with the *SSIWP*, GZA collected and analyzed field duplicate samples and trip blanks.

The split spoon samplers were decontaminated between each sampling interval via scrubbing with an alkaline detergent/water mixture and a water rinse.

Field duplicate samples were collected and analyzed to evaluate the reproducibility of the sampling methods. With the exception of the VOC samples, duplicate soil samples were collected via homogenizing the sample interval and collecting aliquots of the homogenized soil for analysis. Duplicate VOC soil samples were collected directly from the split spoons prior to homogenization. Duplicate groundwater samples were collected sequentially after achieving stabilization of the geochemical parameters. Duplicate samples were collected at a frequency of 1 duplicate sample per 20 samples collected on average. Duplicate soil and groundwater sampling results are included in the applicable summary tables, with a reference to the applicable sample location in the table note section.

A VOC trip blank accompanied each cooler of soil and groundwater samples to the laboratory and was analyzed for the presence of VOCs to evaluate potential cross contamination during sample transport.

A copy of the soil analytical results and chain-of-custody forms are presented in **Appendix M** (Laboratory Reports – Soil Samples), Table 7 (*Summary of Soil QA/QC VOC Analytical Results*) and Table 8 (*Summary of Soil QA/QC TPH, SVOCs, PCBs and Inorganics Analytical Results*).



The following summarizes the soil and groundwater QA/QC samples for the project:

| QA/QC Sample Type | Matrix | Number | Analysis / Comment |
|-------------------|-------------|--------|--|
| Field Duplicates | Soil | 3 | VOCs, TPH, PAHs, PP-13 Metals, Total Cyanide |
| | | 1 | Total Lead, TCLP Lead |
| | | 3 | VOCs, TPH, RCRA-8 Metals, TCLP Lead, PCBs, SVOCs |
| Field Duplicates | Groundwater | 6 | VOCs |
| Trip Blanks | Soil | 7 | VOCs |
| Trip Blanks | Groundwater | 6 | VOCs |

Upon receipt, GZA audited the analytical data to assess whether the analytical data met the data quality objectives of the project. This audit included evaluation of QA/QC samples (e.g., Lab Control Samples/Lab Control Sample Duplicates, Method Blanks, Field Blanks, and Field Duplicates) to evaluate the representativeness, comparability, completeness, precision, accuracy, and sensitivity of the analytical data. An evaluation of the soil and groundwater data is presented in **Appendix N (Summary of Soil QA/QC Results)**.

In general, the soil and groundwater analytical results generally met the project data quality objectives.

3.1.4 DATA GAP SITE INVESTIGATION RESULTS

The following sections present a comprehensive evaluation of environmental data in the vicinity of each data gap described in above.

3.1.4.1 NORTHERN AND WESTERN SITE PERIMETER

Historically, this area was part of the Narragansett Bay and was gradually filled during the 19th century to current grades. No MGP operations were historically located along the western Site boundary or northwestern corner of the property. The majority of this area is not improved with an engineered cap, although a portion of the area is paved with asphalt. The purpose of this data gap evaluation was to provide a better understanding of environmental impacts along the perimeter of the Site, particularly with respect to observations of NAPL in this portion of the property.

Prior to the 2014 SSIWP work, limited investigations had been completed along the northern and western property line / Site boundary. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of impacts in this area. As part of the 2014 investigation, GZA completed twelve (12) additional soil borings (GZ-301D/RCA-12R, GZ-302S/D, GZ-303S/D, GZ-304D, GZ-305S, GZ-306S, GZ-307S, GZ-308S, GZ-309D, GZ-310, GZ-311D and GZ-312S/D), installed nine (9) shallow monitoring wells (RCA-12R, GZ-301S, GZ-302S, GZ-303S, GZ-305S, GZ-306S, GZ-307S, GZ-308S and GZ-312S) and installed seven (7) deep monitoring wells (GZ-301D, GZ-302D, GZ-303D, GZ-304D, GZ-309D, GZ-311D and GZ-312D) along the Site perimeter to further characterize the soil and groundwater impacts. Figure P-1 (*Exploration Location Plan*) in **Appendix P (Data Gap – Northern and Western Site Perimeter)** presents the limits of this data gap area, including the locations of previous explorations and those completed in 2014. The limits of this data gap area were generally defined as within 80 feet of the northern and western property line.

A total of sixty-eight (68) explorations (B-60, B-61, RCA-1, RCA-2, RCA-12, U-1, D84, D85, D86, D87, D88, D89, D90, D91, D92, D92, D93, D94, E84, E85, E86, E90, E91, F11, F23, F24, F25, F29W, F30, F31, F37, F39, F40, F41, F42, F43, F44, F45, F46, F47, F48,



F56, F57, Test Pit D87, Test Pit E86, Test Pit E91, Test Pit F41, Test Pit F56, VHB-1, VHB-3, VHB-5, VHB-14, VHB-15, VHB SS-1, VHB SS-7, VHB SS-8, GZ-301D/RCA-12R, GZ-302S/D, GZ-303S/D, GZ-304D, GZ-305S, GZ-306S, GZ-307S, GZ-308S, GZ-309D, GZ-310, GZ-311D and GZ-312S/D) were previously performed in proximate to the northern and western property line⁹ to depths ranging from 6 to 52.5 feet bgs. These explorations are shown on the attached Figure P-1 in **Appendix P**. Fifteen (15) shallow monitoring wells (RCA-1, RCA-2, RCA-12, RCA-12R, VHB-1, VHB-3, VHB-5, GZ-302S, GZ-303S, GZ-305S, GZ-306S, GZ-307S, GZ-308S, GZ-312S and U-1) and seven (7) deep monitoring wells (GZ-301D, GZ-302D, GZ-303D, GZ-304D, GZ-309D, GZ-311D and GZ-312D) were located in the area. Three (3) additional groundwater grab samples were collected from temporary monitoring wells installed in 2000. Five (5) monitoring wells (VHB-3, GZ-311D, GZ-312S, GZ-312D and U-1) were decommissioned in 2016 (as described below) and three (3) monitoring wells RCA-2, RCA-12 and VHB-5 were noted as destroyed prior to 2010. Boring and test pit logs are included in **Appendix P**.

The following sections provide a discussion of the extent of impacts along the northern and western property line/Site boundary (field screening and observations of impacted soils, soil impacts, groundwater impacts and NAPL impacts) and our conclusions based on the information presented herein. This data gap evaluation did not intend to evaluate impacts in the vicinity of the drainage structures located in the northwestern corner of the Site, although these areas overlap. The drainage rehabilitation area data gap is presented below.

Field Screening and Observations of Impacted Soils

A review of boring and test pit logs from the area indicates the presence of approximately 12 to 16 feet of fill underlain by organic silts, outwash deposits and glacial till (unknown thickness to bedrock). In general, the fill consists of sands and gravels with cinders, cinder ash, coke and coal fragments. Visual indicators of petroleum-like saturation were noted on the boring logs for B-60 (5-13 feet bgs), RCA-2 (6-8 feet bgs), D87 (2-6 feet bgs), E86 (2-6 feet bgs), F44 (6-10 feet bgs), Test Pit D87 (3.5-4 feet bgs), Test Pit E86 (2-6 feet bgs), VHB-1 (4-14 feet bgs), VHB-3 (12-14 feet bgs), VHB-5 (4-6 feet bgs), GZ-302D (10-12 feet bgs), GZ-307S (4-16 feet bgs), GZ-308S (4-6 feet bgs) and GZ-309D (10-14 feet bgs). Petroleum-like odors (also described as “oil-like”) were noted in most borings located in the Site perimeter area (RCA-2, D86, D87, D88, D90, D91, D92, E84, E85, E86, E91, F23, F39, F40, F41, F42, F44, F45, F46, F47, F48, F56, F57, Test Pit D87, Test Pit E86, VHB-1, VHB-3, VHB-5, GZ-302D, GZ-303D, GZ-304D, GZ-305S, GZ-306S, GZ-307S, GZ-308S, GZ-309D, GZ-311D and GZ-312D). Petroleum-like odors were generally noted coincident with the water table (depths of approximately 6 to 14 feet bgs). Visual and olfactory evidence of coal tar-like impacts (sometimes noted as “asphaltic”) were noted in RCA-1 (6-16 feet bgs), Test Pit F41 (0.5-6 feet bgs), VHB-5 (6-10 feet bgs), VHB-15 (9-14 feet bgs), GZ-304D (9-16 feet bgs), GZ-306S (6-8 feet bgs), GZ-309D (8-16 feet bgs) and GZ-310 (6-10 feet bgs). Visual indicators of purifier box-like waste was noted in many borings in the area. Purifier box-like waste is identified with blue or green staining, the presence of wood chips and/or a cyanide or naphthalene-like odors. Indicators of purifier box-like waste was noted on the boring logs for D86 (4-6 feet bgs), F41 (0.5-7 feet bgs), F42 (6-10 feet bgs), VHB-5 (4-6 feet bgs) and GZ-310 (6-8 feet bgs). TVOCs readings from these borings ranged from non-detect (ND) to approximately 955 ppmv. Generally, TVOC readings increased with depth until approximately 2 feet below the water table and decreased thereafter.

Surface Soils

Surface soil samples collected were analyzed for TPH, SVOCs, VOCs, PCBs, pesticides, and inorganic compounds. A total of forty (40) samples were submitted for analysis. The compounds that were detected in excess of the RIDEM I/C-DEC were TPH (240 – 15,000 mg/kg), arsenic (1.7 – 27.3 mg/kg), lead (1.2 – 649 mg/kg), 2,4-Dinitrotoluene (14 mg/kg), Benzo [a] anthracene (0.19 – 330 mg/kg), Benzo [a] pyrene (0.2 – 220 mg/kg), Benzo [b] fluoranthene (0.19 – 340 mg/kg), Benzo [k] fluoranthene (0.19 – 150 mg/kg), Dibenzo [a,h] Anthracene (0.05 – 41 mg/kg) and Indeno [1,2,3-cd] Pyrene (0.14 – 100 mg/kg). TPH was the only compound detected in excess of the RIDEM GB Leachability Criteria (240 – 15,000 mg/kg). Table P-1 (*Surface Soil Data*) in **Appendix P** presents the analytical subsurface soil data collected in this area.

⁹ These explorations were also performed directly proximate to the drainage rehabilitation area.



Subsurface Soils

Subsurface soil samples collected were analyzed for TPH, SVOCs, VOCs, PCBs, pesticides, and inorganic compounds. A total of seventy-seven (77) samples were submitted for analysis.¹⁰ The compounds that were detected in excess of the RIDEM I/C-DEC were benzene (0.008 – 326 mg/kg), TPH (48.6 – 631,000 mg/kg), arsenic (4.2 – 81.9 mg/kg), lead (5.9 – 1,610 mg/kg), Benzo [a] anthracene (0.42 – 2,080 mg/kg), Benzo [a] pyrene (0.269 – 923 mg/kg), Benzo [b] fluoranthene (0.4 – 894 mg/kg), Benzo [k] fluoranthene (0.71 – 740 mg/kg), Chrysene (0.36 – 2,060 mg/kg), Dibenzo [a,h] Anthracene (0.211 – 205 mg/kg), Indeno [1,2,3-cd] Pyrene (0.586 – 382mg/kg) and Naphthalene (0.4 – 165,000 mg/kg). The compounds that were detected in excess of the RIDEM GB Leachability Criteria were benzene (0.008 – 326 mg/kg), toluene (0.0401 – 417 mg/kg) and TPH (48.6 – 631,000 mg/kg). Naphthalene was detected in excess of the RIDEM UCLs in the sample collected from Test Pit E86 at a depth of 4 feet bgs, while TPH was detected at concentrations above the UCLs in samples collected from GZA-304D at a depth of 8-10 feet bgs and 12-14 feet bgs, GZ-306S at a depth of 6-8 feet bgs and GZ-310 8-9 feet bgs. These UCL exceedances coincide with observations of petroleum and/or coal tar-like impacts at depths generally at or below the water table. As further discussed below, these samples where UCL exceedances were observed were also submitted for fingerprint analysis. Table P-2 (*Subsurface Soil Data*) in **Appendix P** presents the analytical subsurface soil data collected in this area.

Soil TPH Fingerprinting Results

Twenty (20) soil samples were submitted for TPH fingerprinting from explorations in the area. As noted above, these samples were also submitted for TPH analysis, with detections ranging from 175 – 631,000 mg/kg. The samples collected from RCA-1, Test Pit E86 4 feet bgs, GZ-304D, GZ-306S 6-8 feet bgs and GZ-310 were fingerprinted as “coal tar” or “tar impacted hydrocarbons”, the samples collected from E86 3.5 feet bgs and 4.5 feet bgs, the samples collected from RCA-2, Test Pit D87, GZ-302D, GZ-303D, GZ-307S, GZ-308S, GZ-309D and GZ-312D were fingerprinted as “lubricating oil”, “Fuel No. 6” or “majority middle distillate” and the samples collected from GZ-305S and GZ-306S 10-12 feet bgs were fingerprinted as “mix of middle distillate petroleum, heavy petroleum and tar impacted hydrocarbons”. A summary of the soil TPH fingerprinting results are presented on Table P-3 (*Soil TPH Fingerprinting Results*) in **Appendix P**.

Groundwater and NAPL Gauging Results

Fifteen (15) shallow monitoring wells (RCA-1, RCA-2, RCA-12, RCA-12R, VHB-1, VHB-3, VHB-5, GZ-302S, GZ-303S, GZ-305S, GZ-306S, GZ-307S, GZ-308S, GZ-312S and U-1) and seven (7) deeper monitoring wells (GZ-301D, GZ-302D, GZ-303D, GZ-304D, GZ-309D, GZ-311D and GZ-312D) were installed in the area. Three (3) additional groundwater grab samples were collected from temporary monitoring wells installed in 2000. Five (5) monitoring wells (VHB-3, GZ-311D, GZ-312S, GZ-312D and U-1) were decommissioned in 2016 (as described below). Based on historical elevation data from these monitoring wells, groundwater is expected to be encountered approximately 2-11 feet bgs in the area. A summary of groundwater elevation and NAPL gauging data for the wells within the area is presented in Table P-4 (*Groundwater and NAPL Gauging*) in **Appendix P**. Figure 6B presents the Shallow Groundwater Contour Plan for the Site. Regional groundwater flow at the Site is expected to flow onto the Site towards the Providence River, however, the presence of utilities in the area influence groundwater flow along the perimeter.

Trace amounts of LNAPL have been historically detected in VHB-1, VHB-2 and VHB-3 between 2002 and 2011 but has not been detected since 2011. Between May 2016 and December 2022, LNAPL was detected in monitoring GZ-307S in thicknesses ranging from 0.01 and 1.00 feet. DNAPL has not been encountered in the area. A summary of LNAPL gauging results for VHB-1, VHB-2 and VHB-3 are presented as Table P-5 (*Historical LNAPL Thicknesses – VHB-1, VHB-2 and VHB-3*) in

¹⁰ The majority of samples were submitted from above the water table; however some samples were submitted for TPH analysis and fingerprinting from below the water table. These samples were submitted to delineate the nature of observed petroleum – like and coal tar-like impacts that were observed in the area.



Appendix P and a summary of LNAPL gauging results for GZ-307S is presented as Table P-6 (*LNAPL Gauging – GZ-307S*) in **Appendix P**.

Groundwater Results

Ninety-nine (99) groundwater samples were collected in the area between 1994 and 2022 and analyzed for VOCs, SVOCs, TPH and total cyanide. Vinyl chloride was the only compound detected in excess of the RIDEM GB Groundwater Objectives in samples collected from RCA-1, RCA-12R, GZ-301D and GZ-303S.¹¹ Table P-7 (*Groundwater Analytical Data*) in **Appendix P** presents the analytical groundwater data collected in this area.

Groundwater TPH Fingerprinting Results

Two (2) groundwater samples were submitted for TPH analysis (including fingerprinting) from RCA-1 and RCA-2. The sample collected from RCA-1 was fingerprinted as “petroleum” and the sample collected from RCA-2 was fingerprinted as “kerosene / fuel oil”. A summary of the groundwater TPH fingerprinting results are presented on Table P-8 (*Groundwater TPH Fingerprinting Results*) in **Appendix P**.

Conclusions

Spatially, observations of petroleum-like impacts were generally observed on the western property line, along Allens Avenue and adjacent to the Site entrance. A mixture of petroleum-like and coal tar-like impacts were noted in the northwestern corner and along the northern property line, adjacent to the Former Motiva property.¹² No impacts were noted in the one boring (GZ-301/RCA-12R) completed along the southwestern property line.

This area exhibits widespread exceedances of RIDEM Method 1 Criteria in both surface and subsurface soils, which is consistent with historical filling patterns at the Site. RIDEM GB Groundwater exceedances were generally limited to vinyl chloride, which is not a constituent of concern at the Site. Several areas along the northern and northwestern Site property boundary had impacts associated with the former use of the property as a MGP (coal tar-like or purifier box -like impacts), which is consistent with the historical filling pattern on Site and may also be complicated by conveyance system which is present in this portion of the Site¹³ (as further discussed below). However, evidence of petroleum-like impacts was also noted along the northern property boundary (adjacent to the Former Motiva property) as well as along the western property line (adjacent to Allens Avenue). As demonstrated by the shallow groundwater contours and the presence of vinyl chloride and other chlorinated compounds (compounds that would not be typically associated with MGP or petroleum -like impacts), groundwater flows on to the Site from the north, the south, and the west. Based on these observations, and the historical operations located on the adjacent Former Motiva property, these petroleum-like impacts are likely associated with off-Site impacts that are flowing onto the Site. It should also be noted that while fingerprinting results indicated the presence of UCL exceedances for TPH in soil collected at or below the water table at explorations in the northwestern corner and along the northern property line, measurable NAPL has not been detected in the area monitoring wells, with the exception of GZ-307S. At this well location, which is located downgradient of the Former Motiva property, evidence of

¹¹ Vinyl chloride is not expected to be a constituent of concern associated with the Site. The detection of Vinyl Chloride at the Site is expected to from off-Site impacts.

¹² As noted above in Section 2.0 and in prior historical reports prepared for the Site, the Former Motiva property abuts the Site to the north and to the west and shares a common 1,000-foot property line and is inferred to be hydraulically upgradient and cross-gradient of the Site. Based on our review of RIDEM files, Motiva has been identified in the database as a RIDEM State Listed Site (SR-28-1476), RCRA generator, a registered UST property and a LUST site. The Former Motiva property has served as a gasoline station, lubricating oil blending, asphalt facility and oil and gas distribution facility since at least 1907. Crude oil was also made into liquid or solid asphalt products on a portion of the property. Based on a review of RIDEM files, at least several historical petroleum product releases have occurred at the former Motiva property. Soil and groundwater on Site may be impacted by the Former Motiva property.

¹³ It should be noted that historically, this drainage conveyance system extended back into the Site towards the Former B.P. Clapp Building. The continuation line has been capped but may be acting as a preferential pathway.



petroleum-like impacts was observed and confirmed through fingerprint analysis (fingerprinted as “majority middle distillate petroleum”).

3.1.4.2 Drainage Rehabilitation Area

This area includes the northwestern corner of the Site where the presence of sheens/product was noted in a portion of the on-Site drainage system (catch basins and conveyance piping). RI Energy’s existing facility control building (offices) is located to the south of the drainage rehabilitation area. Historically, this area was part of the Narragansett Bay and was gradually filled during the 19th century. The majority of the drainage rehabilitation area is currently improved with asphalt pavement. The remainder of the western portion of the drainage rehabilitation area does not yet have an engineered cap and is currently vegetated with grass. It should be noted that historically, this drain line extended further east into the Site towards the former B.P. Clapp Building.

As described below, sheen / product was identified in both catch basin structures and the conveyance piping between them in 2012. Results of forensic testing indicated that the sheen was comprised of complex mixtures of variably weathered petroleum, with the major component being “middle distillate petroleum” (*i.e.*, diesel fuel, or fuel oil #2). The source of this sheen / product is unknown.

As part of the 2014 investigation, GZA completed six (6) additional soil borings (GZ-304D, GZ-305S, GZ-306S, GZ-307S, GZ-308S and GZ-309D) in the drainage rehabilitation area to further characterize the soil and groundwater impacts in this portion of the Site. A total of twenty-three (23) explorations (E84, E85, E86, F43, F44, F45, F46, F47, F48, F56, GZ-304D, GZ-305S, GZ-306S, GZ-307S, GZ-308S, GZ-309D, RCA-1, VHB SS-7, VHB SS-8, VHB-1, VHB-15, Test Pit E86 and Test Pit F56) were performed directly proximate to the drainage rehabilitation area, to depths ranging from 6 to 30 feet bgs. Eight monitoring wells are located in the area (RCA-1, VHB-1, GZ-304D, GZ-305S, GZ-306S, GZ-307S, GZ-308S and GZ-309D). These explorations are shown on the attached Figure Q-1 (*Exploration Location Plan*) in **Appendix Q (Data Gap – Drainage Rehabilitation Area)**. The limits of the drainage rehabilitation data gap area were generally defined as the area directly proximate to the drain line. Boring and test pit logs are included in **Appendix Q**.

The following sections provide a background of rehabilitation activities that were conducted in this area, a discussion of the extent of impacts in the area (field screening and observations of impacted soils, subsurface soil impacts, groundwater impacts and NAPL impacts) and our conclusions based on the information presented herein.

Summary of Rehabilitation Activities

As noted below, TNEC performed rehabilitation activities between May 2012 and January 2013. Rehabilitation activities consisted of thoroughly cleaning the drainage structures and vitrified clay conveyance piping, sealing the drainage structures and conveyance piping utilizing acrylamide grout, hydraulic cement and a spray-on epoxy system and final sealing utilizing a cured-in-place liner. Approximately 290 feet of piping was sealed utilizing a cured-in-place liner.

Visual observations/sampling of the drainage structures have been conducted on average monthly basis since February 2013. Visual observations/sampling consisted of sampling the water in the structure (if possible) for odors, sheens and turbidity. If the structure was dry, visual sampling from above was conducted for odors and significant sheens. Oil containment booms and snares have remained in the catch basins to contain any sheen or petroleum, on an as-needed basis. Between February 2013 and September 2022, containment booms and snares have remained in the catch basins to contain any sheen or petroleum. Although some sheening has been observed in CB-02, no sheening has been observed in downgradient structures (MH-01). Additionally, as part of the existing NBC sewer connection permit for the Natural Gas Regulation Facility building, annual wet weather sampling has been conducted in MH-01 from 2013 to 2021. No evidence of sheen or product has been observed.



Field Screening and Observations of Impacted Soils

A review of boring and test pit logs from the area indicates the presence of approximately 12 to 16 feet of fill underlain by organic silts, outwash deposits and glacial till (unknown thickness to bedrock). In general, the fill consists of sands and gravels with cinders, cinder ash, coke and coal fragments. Visual indicators of petroleum-like saturation were noted on the boring logs for E86 (2-6 feet bgs), F44 (6-10 feet bgs), Test Pit E86 (2-6 feet bgs), VHB-1 (4-14 feet bgs), GZ-307S (4-16 feet bgs), GZ-308S (4-6 feet bgs) and GZ-309D (10-14 feet bgs). Petroleum odors were noted in most borings located in the drainage rehabilitation area (E84, E85, E86, F44, F45, F46, F47, F48, F56, F57, Test Pit E86, VHB-1, GZ-304D, GZ-305S, GZ-306S, GZ-307S, GZ-308S and GZ-309D). Petroleum odors were generally noted coincident with the water table (depths of approximately 6 to 14 feet bgs). Visual and olfactory evidence of coal tar-like impacts (sometimes noted as “asphaltic”) were noted in RCA-1 (6-16 feet bgs), VHB-15 (9-14 feet bgs), GZ-304D (9-16 feet bgs), GZ-306S (6-8 feet bgs) and GZ-309D (8-16 feet bgs). TVOCs readings from these borings ranged from ND to approximately 717 ppmv. Generally, TVOC readings increased with depth until approximately 2 feet below the water table and decreased thereafter. As indicated previously a mixture of petroleum-like and coal tar-like impacts were noted within the drainage rehabilitation area, which is located in the northwestern corner and along the northern property line, adjacent to the Former Motiva property.

Subsurface Soils

Subsurface soil samples collected were analyzed for TPH, SVOCs, VOCs, PCBs, pesticides, and inorganic compounds. A total of thirty-one (31) samples were submitted for analysis.¹⁴ The compounds that were detected in excess of the RIDEM I/C-DEC were benzene (0.008 – 326 mg/kg), TPH (48.6 – 631,000 mg/kg), arsenic (4.2 – 81.9 mg/kg), lead (5.9 – 1,610 mg/kg), Benzo [a] anthracene (0.454 – 2,080 mg/kg), Benzo [a] pyrene (0.269 – 923 mg/kg), Benzo [b] fluoranthene (1.08 – 894 mg/kg), Benzo [k] fluoranthene (1 – 740 mg/kg), Chrysene (0.624 – 2,060 mg/kg), Dibenzo [a,h] Anthracene (0.211 – 205 mg/kg), Indeno [1,2,3-cd] Pyrene (0.586 – 382mg/kg) and Naphthalene (0.76 – 165,000 mg/kg). The compounds that were detected in excess of the RIDEM GB Leachability Criteria were benzene (0.008 – 326 mg/kg), toluene (0.0401 – 417 mg/kg) and TPH (48.6 – 631,000 mg/kg). Naphthalene was detected in excess of the RIDEM UCL in the sample collected from Test Pit E86 at a depth of 4 feet bgs. TPH was detected above the RIDEM UCL in samples from GZA-304D at a depth of 8-10 feet bgs and 12-14 feet bgs and GZ-306S at a depth of 6-8 feet bgs. As indicated below, these UCLs appear to be associated with observations of petroleum-like and coal tar-like impacts and were confirmed via fingerprint analysis. Table Q-1 (*Subsurface Soil Data*) in **Appendix Q** presents the analytical subsurface soil data collected in this area.

Soil TPH Fingerprinting Results

Thirteen (13) soil samples were submitted for TPH fingerprinting, including total TPH analysis, from explorations in the area. The samples collected from RCA-1, Test Pit E86 4 feet bgs, GZ-304D and GZ-306S 6-8 feet bgs were fingerprinted as “coal tar” or “tar impacted hydrocarbons”, the samples collected from E86 3.5 feet bgs and 4.5 feet bgs, GZ-307S, GZ-308S and GZ-309D were fingerprinted as “lubricating oil”, “Fuel No. 6” or “majority middle distillate” and the samples collected from GZ-305S and GZ-306S 10-12 feet bgs were fingerprinted as “mix of middle distillate petroleum, heavy petroleum and tar impacted hydrocarbons”. A summary of the soil TPH fingerprinting results are presented on Table Q-2 (*Soil TPH Fingerprinting Results*) in **Appendix Q**.

Groundwater and NAPL Gauging Results

There are eight (8) active monitoring wells present directly within the area (RCA-1, VHB-1, GZ-304D, GZ-305S, GZ-306S, GZ-307S, GZ-308S and GZ-309D). Based on historical elevation data from these monitoring wells, groundwater is expected to be encountered approximately 2-5 feet bgs in the area. A summary of groundwater elevation and NAPL gauging data for

¹⁴ The majority of samples were submitted from above the water table; however some samples were submitted for TPH analysis and fingerprinting from below the water table. These samples were submitted to delineate the nature of observed petroleum – like and coal tar-like impacts that were observed in the area.



the wells within the area is presented in Table Q-3 (*Groundwater and NAPL Gauging*) in **Appendix Q**. Figure 6B presents the Shallow Groundwater Contour Plan for the Site. Groundwater flow in this area appears to be influenced by the utilities in this area, with groundwater flowing into the area of the Site from the north and west.

Trace amounts of LNAPL was detected in VHB-1 between 2002 and 2005, but LNAPL was not detected between 2005 and 2016. Between May 2016 and December 2016, LNAPL was detected in monitoring GZ-307S in thicknesses ranging from 0.04 and 0.33 feet. DNAPL has not been encountered in the area. A summary of LNAPL gauging results for VHB-1 is presented as Table Q-4 (*Historical LNAPL Thicknesses*) in **Appendix Q** and a summary of LNAPL gauging results for GZ-307S is presented as Table Q-5 (*Historical LNAPL Gauging*) in **Appendix Q**.

Groundwater Results

Fifty-five (55) groundwater samples were collected from nine monitoring wells in the drainage rehabilitation area between 1994 and 2022 and analyzed for VOCs, SVOCs, TPH and total cyanide. Vinyl chloride the only compound detected in excess of the RIDEM GB Groundwater Objectives in a sample collected from RCA-1.¹⁵ Table Q-6 (*Groundwater Analytical Data*) in **Appendix Q** presents the analytical groundwater data collected in this area.

Groundwater TPH Fingerprinting Results

A groundwater sample collected from RCA-1 was submitted for TPH analysis including fingerprinting in 1996. TPH was detected at 1 mg/L. The sample collected was fingerprinted as “petroleum.” A summary of the groundwater TPH fingerprinting results are presented on Table Q-7 (*Groundwater TPH Fingerprinting Results*) in **Appendix Q**.

Sheen/Product TPH Fingerprinting Results

GZA collected several samples of sheen/product from drainage structures (MH-01, CB-01 and CB-02) located in the area, which were submitted to New Fields Analytical Laboratory of Rockland, Massachusetts for fingerprint analysis. Results identified the sheen/product samples as “middle distillate petroleum.” A summary of the sheen/product TPH fingerprinting results are presented on Table Q-8 (*Sheen/Product TPH Fingerprinting Results*) in **Appendix Q**.

Conclusions

Prior to rehabilitation activities, the drainage structures and associated conveyance piping in the northwestern portion of the Site have likely been acting as a preferential pathway for product in this area. All sheen/product samples collected within the drainage structures (prior to rehabilitation) were fingerprinted to be “middle distillate petroleum”, while most of the soil and groundwater impacts in this area generally consisted of a mix of impacts associated with petroleum and coal tar -like impacts. Additionally, since the drainage rehabilitation activities were conducted, LNAPL has been observed in monitoring well GZ-307S, which is located approximately 40 feet north of the repaired drainage line, immediately along the northern property line with the Former Motiva property, possibly because the drainage line and structures has been sealed. The shallow groundwater contours and the presence of vinyl chloride and other chlorinated compounds (compounds that would not be typically associated with MGP or petroleum – like impacts) indicate that groundwater flows on to the Site from the north and the west. Based on the soil and groundwater data presented above, the petroleum-like impacts observed in the drainage structures in this area appears to be migrating from an off-Site source to the north and/or west.

¹⁵ Vinyl chloride is not expected to be a constituent of concern associated with the Site. The detection of Vinyl Chloride at the Site is expected to from off-Site impacts.



3.1.4.3 NATURAL GAS LEAK REPAIR AREA

As described below, sheen was observed in the excavation associated with the natural gas piping repair proximate to the Former Booster House. This pipeline extends from the interior portions of the 642 Allens Avenue property to Allens Avenue. Results of forensic testing identified the sheen to be comprised of primarily “heavy middle distillate” (e.g., cutting oil, light lubricating oil, or gear oil), with low levels of pyrogenic PAHs, which may be indicative of coal tar residue or historical industrial processes. As part of the 2014 investigation, GZA further evaluated data in the vicinity of the natural gas repair. It is noted that additional explorations were not able to be conducted in the direct vicinity of this area due to the presence of extensive utilities¹⁶. The following sections provide a background of the natural gas leak repair area, a discussion of the extent of impacts in the area (field screening and observations of impacted soils, subsurface soil impacts, groundwater impacts and NAPL impacts) and our conclusions based on the information presented herein. Soil data was only evaluated in the direct vicinity (horizontally and vertically) of the natural gas leak repair area, while groundwater data (proximate to the natural water table only) was only evaluated along the “utility corridor” surrounding the natural gas leak repair area (not located directly proximate to the work area). Figure R-1 (*Exploration Location Plan*) in **Appendix R (Data Gap – Natural Gas Leak Repair Area)** presents the areas evaluated along with this data gap.

Six (6) explorations (E59, E73, F35, F52, F53 and Test Pit F35) were performed within 20 feet of the natural gas leak repair area, to depths ranging from 6 to 10 feet bgs. These explorations are shown on the attached Figure R-1 in **Appendix R**. Four (4) monitoring wells were located along the “utility corridor” (as described above) (VHB-2, GZ-302S, GZ-303S and GZ-401). Four (4) additional groundwater grab samples were collected from temporary monitoring wells installed in 2000. One (1) monitoring well (GZ-401) was decommissioned in 2016 (as described below) Monitoring well VHB-2 was noted as destroyed in 2008. Boring and test pit logs are included in **Appendix R**.

Field Screening and Observations of Impacted Soils

All the explorations completed in this area have been relatively shallow. Review of these logs indicates the presence of at least approximately 10 feet of fill. Other deeper borings proximate to the area consist of 15 to 20 feet of fill underlain by some intermittent organic peats, outwash deposits and glacial till. In general, the fill consists of sands and gravels with concrete and wood fragments, cinders, cinder ash, coke and coal fragments. Visually and olfactory indicators of petroleum like impacts were not noted in any of the shallow explorations conducted in this area. TVOCs readings from these explorations were generally ND.

Subsurface Soils

Subsurface soil samples collected were analyzed for TPH, SVOCs, VOCs, PCBs, and inorganic compounds. A total of five (5) samples were submitted for analysis. The compounds that were detected in excess of the RIDEM I/C-DEC were TPH (230 – 19,000 mg/kg), Benzo [a] anthracene (2.3 to 100 mg/kg), Benzo [a] pyrene (1.3 – 72 mg/kg), Benzo [b] fluoranthene (3.5 – 100 mg/kg), Dibenzo [a,h] Anthracene (0.42 – 12 mg/kg) and Indeno [1,2,3-cd] Pyrene (1.4 – 35 mg/kg). Exceedances of the RIDEM GB Leachability were limited to TPH, detected above the RIDEM I/C-DEC and GB Leachability Criteria in one (1/5) sample only, F52 collected between 2-4 feet bgs at a concentration of 19,000 mg/kg. Visual and olfactory indicators of impacts were not noted in this boring. RIDEM UCLs were not exceeded. Table R-1 (*Subsurface Soil Data*) in **Appendix R** presents the analytical subsurface soil data collected in this area.

¹⁶ Utilities noted in this area of the Site include at least active and inactive gas lines, active and inactive water lines, and active drain lines. Utility corridors and inactive utilities that have not been grouted when abandoned, may fill with groundwater and may present a preferential pathway for both groundwater and impacts. Other unknown utilities are likely present in the area.



Groundwater and NAPL Gauging Results

There were four (4) monitoring wells present near the “utility corridor” (as noted above VHB-2 was noted as destroyed in 2008). Based on historical elevation data from these monitoring wells, groundwater is expected to be encountered approximately 4 to 8 feet bgs in the area. A summary of groundwater elevation and NAPL gauging data for the wells within the area is presented in Table R-2 (*Groundwater and NAPL Gauging*) in **Appendix R**. NAPL has not been detected in any of these wells.

Groundwater Results

Nine (9) groundwater samples were collected from seven (7) monitoring wells along this “utility corridor” between 2000 and 2014 and analyzed for VOCs, SVOCs, TPH and total cyanide. SVOCs or TPH have not been detected in the groundwater samples collected in this area. Table R-3 (*Groundwater Analytical Results*) in **Appendix R** presents the analytical groundwater data collected in this area. Vinyl chloride the only compound detected in excess of the RIDEM GB Groundwater Objectives in a sample collected from GZ-303S.¹⁷ Compounds associated with MGP, or petroleum-like impacts (benzene, ethylbenzene, toluene, xylenes or naphthalene for example) were not detected in concentrations approaching the GB Groundwater Objectives in any of these samples.

Sheen TPH Fingerprinting Results

GZA collected a sample of sheen observed from the natural gas leak repair excavation, which was submitted to New Fields Analytical Laboratory of Rockland, Massachusetts for fingerprint analysis. Results of testing identified the sheen to be comprised of primarily “heavy middle distillate” (e.g., cutting oil, light lubricating oil, or gear oil), with low levels of pyrogenic PAHs, which may be indicative of coal tar residue. A summary of the sheen TPH fingerprinting results are presented on Table R-4 (*TPH Fingerprinting Results*) in **Appendix R**.

Conclusions

Based on the soil and groundwater data presented above, the sheen observed during the natural gas repair work is likely associated with the “utility corridor” in this area. The “utility corridor” is likely acting as a preferential pathway for the observed sheens in this area. NAPL or groundwater impacts were not noted in any of the monitoring wells present along this utility corridor (both upgradient and downgradient). In conclusion, although sheens have been noted in this area, these impacts do not appear to be migrating off Site.

As described in below, a portion of this area was capped with new asphalt paving as part of remedial actions associated with the Holder 18/21 Capping Project. These activities were documented in the April 2017 *Short Term Response Action Completion Report – Holder 18/21 Capping Project* prepared by GZA on behalf of TNEC. This report was submitted to RIDEM on April 28, 2017.

3.1.4.4 LEAD UCLS IN THE FORMER GASHOLDER AREA

Four (4) surface soil samples collected directly proximate to Former Gasholders Nos. 18 and 21 exceeded the total lead UCL of 10,000 mg/kg. The location of the two Gasholders is shown on Figure S-1. The two Gasholders were decommissioned and demolished in 2010 as documented in the July 2010 *Construction Completion Report for Decommissioning and Demolition of Gasholders #18 and #21, Allens Avenue, Former MGP, Providence, Rhode Island* prepared by Brown and Caldwell on behalf of TNEC. The extent of the soil disturbance associated with this decommissioning work is unknown. Additional investigations were completed by GZA in 2014 to further delineate the nature and extent of lead impacts in this area following demolition of the

¹⁷ Vinyl chloride is not expected to be a constituent of concern associated with the Site. The detection of Vinyl Chloride at the Site is expected to be attributed to an off-Site/upgradient source.



Gasholders. The following sections provide a discussion of the extent of lead impacts in surface soils in this the area and our conclusions based on the information presented herein. The limits of this data gap area were generally defined as directly proximate to the Former Gasholders.

Between 1994 and 2000, eight-two (82) surface soil samples were collected proximate to the Former Gasholders and submitted for total lead analysis (SU-1 No.1 (0-3"), SU-1 No.1D (12-15"), SU-1 No.2 (0-3"), SU-1 No.3 (0-3"), SU-1 No.3D (12-15"), SU-1 No.4 (0-3"), SU-1 No.4D (12-15"), SU-1 No.5 (0-3"), SU-1 No.6 (0-3"), SU-1 No.7 (0-3"), SU-1 Composite (0-3"), SU-2 No.1 (0-3"), SU-2 No.1D (12-15"), SU-2 No.3 (0-3"), SU-2 No.4 (0-3"), SU-2 No.4D (12-15"), SU-2 No.5 (0-3"), SU-2 No.6 (0-3"), SU-2 No.6D (12-15"), SU-2 No.7 (0-3"), SU-2 Composite (0-3"), Unit #2 SU-2-A1 (0-3"), Unit #2 Replicate SU-1 No.6 (0-3"), Unit #2 Replicate SU-1 No.2 (0-3"), Unit #2 SU-2-A4 (0-3"), Unit #2 SU-2-B1 (0-3"), Unit #2 SU-2-B4 (0-3"), Unit #2 SU-2-C1 (0-3"), Unit #2 SU-2-C4 (0-3"), Unit #2 SU-2-D1 (0-3"), Unit #2 SU-2-D2 (0-3"), Unit #2 SU-2-D3 (0-3"), Unit #2 SU-2-D4 (0-3"), Unit #2 SU-2-E1 (0-3"), Unit #2 SU-2-E2 (0-3"), Unit #2 SU-2-E3 (0-3"), Unit #2 SU-2-E4 (0-3"), Unit #2 Replicate SU-2 No.1 (0-3"), Unit #2 Replicate SU-2 No.6 (0-3"), Unit #2 Replicate SU-2 No.3 (0-3"), Unit #2 SU-2-G4 (0-3"), Unit #2 SU-2-H1 (0-3"), Unit #2 SU-2-H2 (0-3"), Unit #2 SU-2-H3 (0-3"), Unit #2 SU-2-H4 (0-3"), E01 0-2 FT, E02 0-2 FT, E09 0-2 FT, E20 0-2 FT, E21 0-2 FT, E22 0-2 FT, E23 0-2 FT, E24 0-2 FT, E25 0-2 FT, E26 0-2 FT, E27 0-2 FT, E28 0-2 FT, E29 0-2 FT, E30 0-2 FT, E31 0-2 FT, E32 0-2 FT, E34 0-2 FT, E35 0-2 FT, E36 0-2 FT, E41 0-2 FT, E42 0-2 FT, E43 0-2 FT, E53 0-2 FT, E58 0-2 FT, E93 0-2 FT, E94 0-2 FT, E95 0-2 FT, E96 0-2 FT, E97 0-2 FT, E98 0-2 FT, F01 0-2 FT, F02 0-2 FT, F03 0-2 FT, F04 0-2 FT, F05 0-2 FT, F06 0-2 FT, and F58 0-2 FT). A total of ten (10) additional surface soil samples (SS-301 0-1 FT, SS-302 0-1 FT, SS-303 0-1 FT, SS-304 0-1 FT, SS-305 0-1 FT, SS-306 0-1 FT, SS-307 0-1 FT, SS-308 0-1 FT, SS-309 0-1 FT, and SS-310 0-1 FT) were collected by GZA between 2014 and 2015 proximate to the Former Gasholders to assess post-demolition surface soil conditions. These explorations are shown on the attached Figure S-1 (*Exploration Location Plan*) in **Appendix S (Data Gap – Lead UCLs in the Former Gasholder Area)**.

Surface Soils Analytical Results (Total Lead, TCLP Lead and SPLP Lead)

Total lead was detected in ninety (90/92) samples at concentrations ranging from 14.1 to 21,100 mg/kg, with fifty-nine (59/92) samples detected in excess of the RIDEM I/C-DEC of 500 mg/kg and four (4/92) samples detected in excess of the RIDEM UCL of 10,000 mg/kg. None of the samples collected by GZA in 2014-2015 exceeded the RIDEM UCL. TCLP lead was detected in eight (8/10) samples at concentrations ranging from 3.35 to 36 mg/L. Five (5) samples with TCLP results in excess of 5 mg/L were re-analyzed in July 2015 for SPLP Lead analysis.¹⁸ SPLP lead was detected in these samples (5/5) at concentrations ranging from 0.232 to 2.93 mg/L. Table S-1 (*Surface Soil Data*) in **Appendix S** presents the surface soil data (total lead, TCLP lead and SPLP lead) collected in this area.

Groundwater Analytical Results (Total Lead)

No groundwater samples in the area were submitted for lead analysis, however, samples of containerized groundwater were collected from the area during the gas line repair dewatering effort completed in 2013¹⁹. One grab sample was collected during dewatering and exceeded the RIDEM GA Groundwater Objective for lead (0.015 mg/L); this sample was collected during active dewatering and was likely very turbid (which leads to increased metal concentrations associated with suspended soil particles). Two influent grab samples were collected from the discharge of the tanks prior to treatment via the on-Site treatment system. Both influent samples were very low (far below the RIDEM GA Groundwater Objectives) to ND for lead and are likely more representative of actual groundwater conditions in the area. This data further reinforces that the lead and the low SPLP lead concentrations detected proximate to the Former Gasholder are likely not impacting

¹⁸ SPLP analysis is a SW-846 test method that can be used with soil samples to estimate the site-specific adsorption-desorption potential of a compound that may impact groundwater. The analysis is intended to simulate the effect of rainfall (which eventually makes it to the groundwater) on compounds that are sorbed to soil particles.

¹⁹ Summary Letter Report – Temporary On-site Treated Groundwater Discharge Permit prepared by GZA on behalf of TNEC submitted to RIDEM on May 23, 2013.



groundwater at the Site. Table S-2 (*Groundwater Samples (lead only)*) in **Appendix S** presents the groundwater data (total lead) collected during the dewatering activities completed in this area.

Conclusions

Based on the soil (including the more recent and likely more representative soil samples collected by GZA in 2014) and groundwater data presented above, an engineered cap was implemented in this area during recent remedial activities to prevent exposure to impacted surface soils (including lead concentrations). As described below, the engineered caps within the Former Gasholder area consisted of new asphalt paving or a topsoil engineered cap. Surface soils in the vicinity of the Former Gasholders was segregated during clearing and grubbing activities and recycled at ESMI in Loudon, NH. As described above, these remedial activities were documented in the April 2017 *Short-Term Response Action Completion Report – Holder 18/21 Capping Project* prepared by GZA on behalf of TNEC, submitted to RIDEM on April 28, 2017.

3.1.4.5 COVE AREA

Sheen observations have been consistently observed at mid and low tide since at least 1996. The cove is directly proximate to an area referred to as the "seep area". In 1996, several remedial actions were completed in the area to address the source of the sheens, as documented in the 1996 *Phase II Field Characterization Investigation* prepared by RCA and in 2002 as documented in November 2002 *Remedial Action Closure Report* prepared by VHB. These remedial actions included the completion of significant excavation along the shoreline to address former historical structures and potential sources to the observed sheens. The limits of this data gap area were generally defined as within 100 feet of the edge of the Providence River.

The following sections provide a discussion of the historical activities in this area, the extent of impacts in the area (field screening and observations of impacted soils, subsurface soil impacts, groundwater impacts and NAPL impacts) and our conclusions based on the information presented herein. Sixty (60) explorations (RCA-3, RCA-4, RCA-5, RSS-1, RSS-2, RSS-3, RSS-4, RSS-5, RSS-6, RSS-7, RCA-R10, B07, B08, B09, B17, B18, B20, B21, B22, B23, B24, B25, B26, D94, Test Pit B07, Test Pit B09, RHB-2, RHB-3, RHB-4, RHB-6, VHB-4, TP-1, TP-2, TP-6, TP-35, TP-36, TP-37, CHES RW-3, CHES RW-4, GZ-313D, GZ-314S/D, GZ-315S/D, B-62, B-63, B-70, B-70A, B-71, B-72, B-73A, B-74, B-75, B-76, B-77, B-78, B-79, GZ-7A-7E, SB-06, Golder B-202, Golder B-203 and Golder B-204) were performed directly proximate to the cove area, to depths ranging from 2 to 174 feet bgs. Eight (8) monitoring wells (RCA-3, RCA-4, RCA-5, VHB-4, GZ-313D, GZ-314S, GZ-314D and GZ-315D) and two (2) recovery wells (CHES RW-3 and CHES RW-4) were located in this area. One (1) additional groundwater grab sample was collected from a temporary monitoring well (B22) installed in 2000. Monitoring wells RCA-4 and VHB-4 were noted as destroyed in 2002. The remainder of the wells (RCA-3, RCA-4, RCA-5, VHB-4, GZ-313D, GZ-314S, GZ-314D, GZ-315D, CHES RW-3 and CHES RW-4) were decommissioned in 2016 (as described below). These explorations are shown on the attached Figure T-1 (*Exploration Location Plan*) in **Appendix T (Data Gap – Cove Area)**. Boring and test pit logs are included in **Appendix T**.

Please note that sampling depths that are noted in the following discussion are from the 2014 grades in the area. As noted above, portions of the area have been remediated and capped and relative sampling depths are unknown. The discussion of environmental impacts presented in the following paragraphs pertains to material remaining within the area limits following the remedial activities discussed previously based on GZA's review of available information.

Historical Use Proximate to the Cove

This area of the Site was occupied by MGP operations from at least 1910 to 1954. At least fourteen (14) historical structures were located directly proximate to the cove, in the immediate upland portions of the Site: Former Salt Water Intake, two Former Filters, a Former Relief Gasholder No. 16, Former Open Cooling Tank, Former Open Separating Tank, Former Open Tar Tank, Former Salt Water Condenser, Former Engine/Power House, Former Boiler House, Former Exhauster House, Former Storage/Battery Room, Former Water Gas Generator House and Former Coal Bin. The approximate locations of these historical features are presented on Figure 5B. The area was used to manufacture gas, purify gas and store manufactured gas prior to distribution. During operations, the area was mostly used for CWG production. The former



saltwater intake structure was used to intake cooling water to be used for gas manufacture and distribution. After the process of gasification, subsequent processes involved removing tars, water, oils, and other constituents to improve the quality of the gas. The primary by-products of the CWG process were coal tar, ash and clinker.

The Former Gasholder that was located within the cove area was an above grade Gasholder. Based on information presented in the December 1998 *RAWP* prepared by ESS on behalf of PGC, the holder structure itself was entirely above grade and was supported by a timber pile relieving platform. The relieving platform was likely designed to mitigate settlement of the underlying compressible soils due to the placement of the approximately nine feet of backfill required to meet design elevations. Seven borings were performed within the footprint of the Former holder (RHB-1, RHB-2, RHB-3, RHB-4, RHB-5, RHB-6 and RCA-B11). These borings indicated approximately one foot of concrete at the surface underlain by approximately 9 feet of petroleum-like impacted sands and gravels, consistent with the foundation system described above. At approximately nine to ten feet bgs, all borings encountered refusal, likely on the underlying pile cap section. The December 1998 *RAWP* proposed to maintain the existing concrete cap/pad as an encapsulation for the petroleum-like impacted sands and gravels within.

From June 1 to July 17, 2015, Weidlinger Associates Inc. on behalf of Kiewit Power Constructors (Kiewit) performed geotechnical investigation within the footprint of the liquefaction facility for the pre-design of the foundations for the liquefaction buildings and equipment. This investigation included test borings to depths ranging from 51 feet to 101 feet below grade, boring logs from this investigation are included in **Appendix T**. Hydrocarbon like odors and sheens were noted boreholes B-203 and B-204, which are proximate to the Former Relief Gas Holder #16 and former filter, respectively. Weidlinger did not collect soil samples for environmental testing as part of their investigation. At the beginning of the liquefaction project in February 2019, Kiewit performed a test pit excavation to evaluate the timber piles supporting Former Relief Gas Holder #16. During this excavation NAPL was encountered, NAPL and groundwater were removed from the excavation during the test pitting activities. This dewatering water and NAPL were disposed of as part of the Liquefaction project, disposal documentation is included in the STRAP Closure Report dated March 21, 2023.

Field Screening and Observations of Impacted Soils

A review of boring and test pit logs from the area indicates the presence of approximately 15 to 20 feet of fill underlain by organic silts (variable thickness of at least 12 to up to 83 feet), outwash deposits (also known herein as bearing sand; at least 60 feet in thickness) and glacial till (unknown thickness to bedrock). In general, the fill consists of sands and gravels with cinders, cinder ash, coke and coal fragments. Visual indicators of petroleum-like saturation were noted on the boring logs for B-70 (10-15 feet bgs), B-70A (0-15 feet bgs), B-72 (5-10 feet bgs), B-74 (5-15 feet bgs), RCA-4 (4-10, 12-14, and 24-26 feet bgs), RCA-5 (10-12 and 14-16 feet bgs), B07 (2-6 feet bgs), B20 (4.5-6 feet bgs), B24 (9.75-10 feet bgs), GZ-314S/D (2-6 and 12-19 feet bgs), GZ-315D (2-18 feet bgs) and B-203 (14-20 feet bgs). Petroleum-like odors were noted in most borings located in the cove area (B-70, B-70A, B-71, B-72, B-74, GZ-7C, RCA-4, B07, B09, B17, B20, B21, B22, B24, B25, B49, Test Pit B07, Test Pit B09, GZ-313D, GZ-314S/D, GZ-315D, SB-06, B-202, B-203 and B-204) and were generally noted coincident with the water table (depths of approximately 6 to 14 feet bgs). Visual and olfactory evidence of coal tar-like impacts were noted in RCA-3 (10-12 feet bgs) and VHB-4 (6-14 feet bgs). These two explorations are located adjacent to the oil water separator which is connected to the storm drain system for portions of the Site where historical MGP operations were located. took place. Several deeper borings/monitoring wells were completed in this area (GZ-313D, GZ-314S/D, GZ-315S/D, B-62, B-63, B-70, B-70A, B-71, B-72, B-73A, B-74, B-75, B-76, B-77, B-78, B-79, GZ-7A-7E, SB-06, Golder B-202, Golder B-203 and Golder B-204) to delineate the vertical extent of impacts. Petroleum-like or coal tar-like impacts were limited to the fill and the upper 1 to 2 feet of the organic silts in this area. TVOCs readings from these borings ranged from ND to approximately 1,700 ppmv. Generally, TVOC readings increased with depth until approximately 2 feet below the water table and decreased thereafter.

Boring located within the Former Gasholder foundation (RHB-2, RHB-3, RHB-4 and RHB-6) generally indicated petroleum-like odors increasing with depth to the bottom of the relieving platform.



Field Screening and Observations of Sediments

Several borings/explorations were conducted in the sediments downgradient of the cove (B-76, B-77, B-78, B-79, RSS-1, RSS-2, RSS-3, RSS-4, RSS-5, RSS-6 and RSS-7). The B-series (geotechnical boring) were completed approximately 30 feet from the shoreline and the RSS-series (sediment sample) were completed approximately 5 feet from the shoreline. Visual or olfactory evidence of impacts were not noted in the B-series which were installed to depths of approximately 52 to 62 feet below mudline, while visual and olfactory indicators of petroleum-like and/or coal tar-like impacts were observed in all of the RSS-series explorations at depths of approximately feet 1.5 feet below mudline.

Subsurface Soils

Subsurface soil samples collected were analyzed for TPH, SVOCs, VOCs, PCBs, pesticides, and/or inorganic compounds. A total of forty-six (46) samples were submitted for analysis.²⁰ The compounds that were detected in excess of the RIDEM I/C-DEC were TPH (110 – 11,100 mg/kg), TPH diesel range organics (DRO) (10,000 – 11,000 mg/kg), arsenic (2 – 15 mg/kg), lead (6.6 – 895 mg/kg), Benzo [a] anthracene (0.288 to 32.2 mg/kg), Benzo [a] pyrene (0.42 – 96 mg/kg), Benzo [b] fluoranthene (0.32 – 57.6 mg/kg), Dibenzo [a,h] Anthracene (0.087 – 7.8 mg/kg) and Indeno [1,2,3-cd] Pyrene (0.23 – 27 mg/kg). The compounds that were detected in excess of the RIDEM GB Leachability Criteria were TPH (110 – 11,100 mg/kg) and TPH DRO (10,000 – 11,000 mg/kg). RIDEM UCLs were not exceeded in the soil samples analyzed in this area of the Site. Soil exceedances of the RIDEM I/C-DEC and the GB Leachability Criteria were generally widespread throughout the cove area. Table T-1 (*Subsurface Soil Data*) in **Appendix T** presents the analytical subsurface soil data collected in this area.

Soil TPH Fingerprinting Results

Five (5) soil samples were submitted for TPH fingerprinting from RCA-3 (8-10 feet bgs), RCA-4 (8-10 feet bgs), RCA-5 (14-16 feet bgs), ETP-38 (8.5 feet bgs) and GZ-313D (18-20 feet bgs). The samples collected from RCA-3 and RCA-5 were fingerprinted as “fuel oil”, the samples collected from RCA-4 and ETP-38 were fingerprinted as “fuel oil mixed with coal tar” and the sample collected from GZ-313D was fingerprinted as “tar impacted hydrocarbons”. A summary of the TPH soil fingerprinting results is presented in Table T-2 (*Soil TPH Fingerprinting Results*) in **Appendix T**.

Sediment TPH Fingerprinting Results

Seven (7) sediment samples were submitted for TPH fingerprinting from RSS-1, RSS-2, RSS-3, RSS-4, RSS-5, RSS-6 and RSS-7. The samples collected from RSS-1, RSS-2, RSS-3, RSS-4 and RSS-7 were fingerprinted as “coal tar / fuel oil”, the sample collected from RSS-5 was fingerprinted as “fuel oil” and the sample collected from RSS-6 was fingerprinted as “diesel / coal tar”. A summary of the TPH sediment fingerprinting results is presented in Table T-3 (*Sediment TPH Fingerprinting Results*) in **Appendix T**.

Groundwater and NAPL Gauging Results

Eight (8) monitoring wells (RCA-3, RCA-4, RCA-5, VHB-4, GZ-313D, GZ-314S, GZ-314D and GZ-315D) and two (2) recovery wells (CHES RW-3 and CHES RW-4) were located in this area. One (1) additional groundwater grab sample was collected from a temporary monitoring well (B22) installed in 2000. Monitoring wells RCA-4 and VHB-4 were noted as destroyed in 2002. The remainder of the wells (RCA-3, RCA-4, RCA-5, VHB-4, GZ-313D, GZ-314S, GZ-314D, GZ-315D, CHES RW-3 and CHES RW-4) were decommissioned in 2016 (as described below). Based on elevation data from these monitoring wells, groundwater is expected to be encountered approximately 6 to 14 feet bgs in the cove area. A summary of historical

²⁰ The majority of samples were submitted from above the water table; however some samples were submitted for TPH analysis and fingerprinting from below the water table. These samples were submitted to delineate the nature of observed petroleum – like and coal tar-like impacts that were observed in the area.



groundwater elevation data for monitoring wells proximate to the cove is presented in Table T-4 (*Groundwater and NAPL Gauging*) in **Appendix T**. Groundwater is tidally influenced (0.5 to 3.5 fluctuations have been observed).

LNAPL has been historically detected proximate to the cove at thicknesses ranging from trace amounts to 2 feet, in wells RCA-4, RCA-5, CHES RW-3 and CHES RW-4. DNAPL has been detected in trace amounts in RCA-3. Table T-5 (*LNAPL Thickness Gauging*) and Table T-6 (*DNAPL Thickness Gauging*) in **Appendix T** present the historical LNAPL and DNAPL thicknesses, respectively. LNAPL has not been detected in thicknesses of more than 0.1 feet since 2006, has not been detected in thicknesses of more than 0.03 feet since 2011 and has only been detected in trace amounts since 2014.

Groundwater Results

Thirty (30) groundwater samples were collected from eight (8) wells proximate to the cove (RCA-3, RCA-4, RCA-5, GZ-313D, GZ-314S, GZ-314D, GZ-315D and temporary well point B22) between 1994 and 2016 and analyzed for VOCs, SVOCs, TPH and/or total cyanide. Naphthalene, benzene, ethylbenzene and/or toluene have been detected in excess of the RIDEM GB Groundwater Objectives in samples collected from RCA-4, MW-314S, MW-314D and MW-315D. Benzene has been detected in excess of the RIDEM GB Upper Concentration Limit (UCL) in samples collected in 1994 and 1996 from RCA-4. As indicated above, this well was destroyed in 2002 during remedial response actions. Groundwater samples collected from replacement wells (i.e., GZ-314S/D) installed proximate to this former well location do not indicate benzene concentrations above the UCL. Groundwater analytical data for monitoring wells proximate to the cove is presented as Table T-7 (*Groundwater Analytical Data*) in **Appendix T**.

Groundwater TPH Fingerprinting Results

Groundwater samples were submitted for TPH analysis (including fingerprinting) from RCA-3, RCA-4 and RCA-5 in 1994 and 1996. TPH ranged from 11.9 to 90 mg/L, with the highest concentrations observed in RCA-4. Samples collected from RCA-3, RCA-4 and RCA-5 in 1994 were all fingerprinted as “fuel oil”. Samples collected from RCA-3 and RCA-4 in 1996 were fingerprinted as “kerosene / fuel oil”. The sample collected from RCA-5 in 1996 was fingerprinted as “coal tar / fuel oil”. A summary of the TPH groundwater fingerprinting results is presented on Table T-8 (*Groundwater TPH Fingerprinting Results*) in **Appendix T**.

Sheen Observations

Between September 2011 and December 2016, the shoreline adjacent to the Site was inspected for the presence of sheens in the Providence River on at least a monthly basis. Portions of the Site’s shoreline are surrounded by both hard boom and absorbent sausage boom to contain any observed sheen. As described above, this boom has been in place since at least 2002. The current boom configuration is illustrated on Figure 3B. Sheens have been regularly observed proximate to the shoreline in the cove area. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. Sheens observed at high tide were generally less significant and observed intermittently. A table summarizing sheens observations proximate to the cove area is presented as Table T-9 (*Summary of Sheen Observations in Proximity to Cove*) in **Appendix T**.

Sheen Fingerprint Samples

In June 2013, a sheen sample was collected by GZA personnel during a monitoring event and was submitted to New Fields Analytical Laboratory of Rockland, Massachusetts for fingerprint analysis. Results identified the sheen sample as “mixed petroleum oil tar and parking lot runoff”. A summary of the TPH sheen fingerprinting results is presented on Table T-10 (*Sheen TPH Fingerprinting Results*) in **Appendix T**.



Conclusions

Sheens have been consistently observed proximate to the cove area of the Site since at least 2011. A containment boom has been deployed in this portion of the Site since at least 2002. Significant source removal was conducted in this area in 2002 and an engineered cap was installed over the majority of the area. LNAPL was initially detected at thickness of up to 2 feet in 2005 but has consistently decreased since then and has been detected in only trace amounts since 2014. Sediment in the cove appears to have visual and olfactory evidence of impacts, with TPH fingerprinting as “fuel oil mixed with coal tar”.

The subsurface impacts detected, and significant upland remedial efforts completed to date indicate that observed sheens in the cove area are likely attributable to residual impacts in the sediment. Additional remedial efforts in the upland portions of the Site would not likely aid in decreasing the presence of sheens in the cove. The existing containment boom appears to be effective in limiting sheens in the cove from migrating off-Site, as very limited to no sheens have been observed outside the containment boom adjacent to the Site.

3.1.4.6 OXIDE BOX WASTE AREA

In January 2009, VHB on behalf of TNEC submitted to RIDEM a memo entitled *Oxide Box Waste Summary Memo* presenting a summary of investigations performed in the oxide box waste area, analytical testing results and VHB’s recommended remedial approach for the former oxide box waste area. VHB’s recommended remedial approach included soil removal and disposal and improving the area with an engineered cap. VHB assumed that the soil removed from the area would be acceptable for recycling via thermal desorption at ESMI Companies in Loudon, NH. As part of the 2014 investigation, GZA completed four (4) additional shallow soil borings (GZ-321S, GZ-322S, GZ-323S, and GZ-324S) in the oxide box waste area to further characterize the soil and groundwater impacts and to further evaluate the recommended remedial approach. The area is known as the “oxide box waste area” because of the presence of purifier box waste. The purifier box waste likely originates from the presence of the four (4) Former purifier tanks located in the oxide box waste area and in the area to the east. The following sections provide a background of the oxide box waste area, a discussion of the extent of impacts in the area (field screening and observations of impacted soils, soil impacts, groundwater impacts and NAPL impacts) and our conclusions based on the information presented herein.

Thirty-six (36) explorations were performed in the oxide box waste area, to depths ranging from 3.5 to 16 feet bgs. These explorations are shown on the attached Figure U-1 (*Exploration Location Plan*) in **Appendix U (Data Gap – Oxide Box Area)**. All of the explorations were performed for environmental purposes (RCA-11, E03, E04, E08, E09, E10, E11, E12, E13, E14, E15, E16, E17, E18, E19, C19, C20, C21, Test Pit E15, B-1 / VHB-18, B-2, B-2B, B-2C, B-2D, B-3, B-4 / VHB-19, B-8, VHB TP-100, VHB TP-101, VHB TP-102, VHB TP-103, VHB TP-104, GZ-321S, GZ-322S, GZ-323S and GZ-324S). B-2D was completed after refusal was encountered in B-2, B-2B and B-2C. Two monitoring wells were located in the area (RCA-11 and VHB-18) and were decommissioned in 2016 (as described below). An additional monitoring well was located in the area (VHB-19) but was noted as destroyed in 2011. Boring and test pit logs are included in **Appendix U**.

Field Screening and Observations of Impacted Soils

All the explorations completed in the oxide box waste area have been relatively shallow. Review of the logs indicates the presence of at least approximately 16 feet of fill. Other deeper borings proximate to the area consist of 15 to 20 feet of fill underlain by some intermittent organic silts, outwash deposits and glacial till. In general, the fill consists of sands and gravels with concrete and wood fragments, cinders, cinder ash, coke and coal fragments. Visual indicators of purifier box waste-like material were noted in many borings in the area. Purifier box waste is identified with blue or green staining, the presence of wood chips and a cyanide or naphthalene-like odors. Indicators of purifier waste were noted on the boring logs for RCA-11 (0-10 feet bgs), C20 (1-5 feet bgs), C21 (0.5-6.5 feet bgs), E09 (0.5-2.5 feet bgs), E15 (0-6 feet bgs), Test Pit E15 (0-4.5 feet bgs), B-1 (0-8 feet bgs), B-2 (0-4 feet bgs), B-2B (0-4 feet bgs), B-2C (0-6.5 feet bgs), B-2D (0-6 feet bgs), B-3 (1.25-4 feet bgs), B-4 (0-1.5 feet bgs), B-8 (0-2.5 feet bgs), VHB TP-100 (4-5 feet bgs), VHB TP-101 (4-7 feet bgs), VHB TP-102 (3-6



feet bgs), VHB TP-103 (3-5 feet bgs), VHB TP-104 (0-6 feet bgs), GZ-322S (2-3.5 feet bgs) and GZ-324S (2-5 feet bgs). TVOCs readings from these explorations ranged from ND to above the range of the instrument (more than 2,500 ppmv). Generally, TVOC readings were higher in the surface soils (0 to 2 feet bgs) and the near surface soils and were coincident with observations of purifier box waste (ranging from 2 to 6 feet bgs). TVOCs were generally ND at and below the water table (depths of approximately 6 to 8 feet bgs). Explorations located closer to the Compressor House No.2 (to the north; C19, E03, E04, E08, and GZ-321S) and closer to the location of Former Holder No.21 (to the west; E11, E12, E13, E14, E16, E17, E18, E19 and GZ-323S) generally did not note odors or other indications of impact. Refusal was noted in several explorations on apparent concrete in the area (likely remnants of the Former purifier tanks). These include C20 (three attempts to 1 feet bgs and final attempt at 5 feet bgs), E15 (6 feet bgs), B-2 (4 feet bgs), B-2B (4 feet bgs), B-2C (6.5 feet bgs), VHB TP-100 (5 feet bgs), VHB TP-101 (7 feet bgs), VHB TP-102 (7 feet bgs), and VHB TP-103 (4 feet bgs).

Surface Soils Analytical Results

Surface soil samples collected were analyzed for TPH, SVOCs, VOCs, PCBs, pesticides, and inorganic compounds. A total of eighteen (18) samples were submitted for analysis. The compounds that were detected in excess of the RIDEM I/C-DEC were TPH (240 – 40,000 mg/kg), arsenic (3 – 47.3 mg/kg), lead (5.4 – 515 mg/kg), Benzo [a] Pyrene (0.68 – 1.6 mg/kg) and naphthalene (0.67 – 15,400 mg/kg). Cyanide was detected in concentrations ranging from 0.8 to 62 mg/kg, far below the RIDEM I/C-DEC of 10,000 mg/kg. The compounds that were detected in excess of the RIDEM GB Leachability Criteria were benzene (0.11 – 27.2 mg/kg), toluene (0.034 – 194 mg/kg), and TPH (240 – 40,000 mg/kg). Naphthalene and TPH were detected in excess of the RIDEM UCLs in the sample collected from B-8 at a depth of 1-2 feet bgs. Exceedances of the RIDEM UCL and GB Leachability Criteria in the surface soils in this area are generally limited to this sample. The remainder of the I/C-DEC exceedances were detected across the oxide box area with no discernible pattern. Table U-1 (*Surface Soil Data*) in **Appendix U** presents the analytical surface soil data collected in this area.

Subsurface Soils Analytical Results

Subsurface soil samples collected were analyzed for TPH, SVOCs, VOCs, PCBs, pesticides, and inorganic compounds. A total of twenty-nine (29) samples were submitted for analysis. The compounds that were detected in excess of the RIDEM I/C-DEC were TPH (140 – 9,700 mg/kg), arsenic (10.3 – 13.6 mg/kg), Benzo [a] anthracene (0.558 to 110 mg/kg), Benzo [a] pyrene (0.261 – 70 mg/kg), Benzo [b] fluoranthene (0.638 – 100 mg/kg), Dibenzo [a,h] Anthracene (0.244 – 4.2 mg/kg) and Indeno [1,2,3-cd] Pyrene (0.433 – 29 mg/kg). Cyanide was detected in concentrations ranging from 0.066 to 197 mg/kg, far below the RIDEM I/C-DEC of 10,000 mg/kg. The compounds that were detected in excess of the RIDEM GB Leachability Criteria were benzene (0.0186 – 173 mg/kg), ethylbenzene (0.0217 – 159 mg/kg), toluene (0.0735 – 321 mg/kg), and TPH (140 – 9,700 mg/kg). RIDEM UCLs were not exceeded. Subsurface soil exceedances of the RIDEM I/C-DEC and the GB Leachability Criteria in this area are generally limited to the area directly proximate to GZ-324S. Table U-2 (*Subsurface Soil Data*) in **Appendix U** presents the analytical subsurface soil data collected in this area.

Groundwater and NAPL Gauging Results

There were two (2) active monitoring wells present directly within the area (RCA-11 and VHB-18). Based on historical elevation data from these monitoring wells, groundwater is expected to be encountered approximately 4 feet bgs in the area. A summary of groundwater elevation and NAPL gauging data for the wells within the area is presented in Table U-3 (*Groundwater and NAPL Gauging*) in **Appendix U**. LNAPL has been historically detected in trace amounts only in monitoring wells RCA-11 and VHB-18, with no LNAPL detected in either well since 2003. DNAPL has not been encountered in the oxide box area.

Groundwater Analytical Results

Nineteen (19) groundwater samples were collected from three (3) monitoring wells in the oxide box area between 1994 and 2016 and analyzed for VOCs, SVOCs, TPH and total cyanide. SVOCs or TPH have not been detected in the groundwater



samples collected in this area. Benzene was detected in excess of the RIDEM GB Groundwater Objectives in samples collected from VHB-18 between 2002 and 2008, however concentrations of benzene were not detected in either of the samples collected in 2009 and 2010. As noted above, VHB-18 was found damaged in 2011 and had not been sampled since then. Groundwater samples collected from RCA-11 and VHB-19 have relatively low levels of detected VOCs, with no elevated concentrations or exceedances of RIDEM criteria detected. Table U-4 (*Groundwater Analytical Data*) in **Appendix U** presents the analytical groundwater data collected in this area.

Conclusions

As described below, this area was capped with a geosynthetic liner system (LLDPE with an 8-ounce non-woven geotextile cushion layer above and below) overlain with new asphalt paving or a topsoil engineered cap. An approximate 10-foot by 10-foot excavation was completed at the location of B-08 to a depth of 3 feet bgs. This soil was recycled at ESMI in Loudon, NH.

As described above, these remedial activities were documented in the April 2017 *Short-Term Response Action Completion Report – Holder 18/21 Capping Project* prepared by GZA on behalf of TNEC, submitted to RIDEM on April 28, 2017.

3.1.4.7 MONITORING WELL RCA-3 DNAPL

Monitoring well RCA-3 was located in the north-central portion of the Site proximate to the cove, as shown on Figure V-1 (*Exploration Location Plan*) in **Appendix V** (*Data Gap – RCA-3 DNAPL*). Since 2001, DNAPL had been identified in RCA-3 at thickness ranging from trace to 0.17 feet (see Table V-4 (*Historical DNAPL Thickness*) of **Appendix V**). In 2014, GZA completed a deeper boring (GZ-313) at the location of RCA-3 and installed a deeper monitoring well (GZ-313D) to determine the vertical extent of DNAPL in this area. The following sections provide a background of the area proximate to RCA-3, a discussion of the extent of DNAPL impacts in the area (field screening and observations of impacted soils, groundwater impacts and NAPL impacts) and our conclusions based on the information presented herein. The RCA-3 area of the Site was utilized for coal and coke storage and is located cross-gradient of the Former Benzol Building, Former Ammonia Works and the Former Compressor House No.1. As shown on Figure V-1 in **Appendix V**, RCA-3 is directly proximate to an active oil water separator and associated drain lines which extend further into the Site (the majority of the Site drainage system is shown on Figure 3A). RCA-3 is also directly proximate to natural gas lines which extend further into the Site.

Twenty-two (22) explorations were performed proximate (for purposes of this discussion, limited to 100 feet in diameter) to RCA-3, to depths ranging from 6 to 117 feet bgs. These explorations are shown on the attached Figure V-1 in **Appendix V**. Four (4) explorations were performed for geotechnical purposes (B-61, B-62, B-70, and B-70A). Two (2) test pits were performed for waste characterization purposes (TP-36 and TP-37). Sixteen (16) explorations were performed for environmental purposes (RCA-3, RCA-R4, ETP-38, GZ-313D, VHB-4, MHA-4, MHA-5, B06, B07, B08, B09, B10, B11, B18, D93 and D94). Two monitoring wells were located in the area (RCA-3 and GZ-313D) and were decommissioned in 2016 (as described below). No analytical samples were collected from the geotechnical borings and information regarding visual and olfactory indicators of residuals is limited. The geotechnical borings ranged in depth from 31.5 to 117 feet bgs, while the environmental borings ranged in depth from 6 to 36 feet bgs. Logs from both the geotechnical and environmental borings are included as **Appendix V**. The boring logs for RCA-R4 and waste characterization test pit logs were not available in the reports reviewed by GZA. Additionally, locations collected for geotechnical sampling (CPT data, etc.) purposes only are not included in the context of this report. Please note that sampling depths that are noted in the following discussion are from the original grades. As noted previously, portions of the area have been remediated and capped and relative sampling depths are unknown. The discussion of impacts presented in the following paragraphs pertains to residual material remaining within the area limits following the remedial activities discussed previously based on GZA's review of available information.



Field Screening and Observations of Impacted Soils

Review of these boring logs proximate to RCA-3 indicates the presence of approximately 15 to 20 feet of fill underlain by intermittent organic silts, outwash deposits and glacial till. In general, the fill consists of sands and gravels with cinders, cinder ash, coke and coal fragments. Visual indicators of petroleum -like saturation were noted on the boring logs for RCA-3 (8-10 and 14-16 feet bgs), B07 (3.75-6 feet bgs), B-70 (10-11.5 feet bgs) and B-70A (10-15 feet bgs). Black staining was indicated on most borings in the fill layers. Visual indicators of MGP-like residuals (*i.e.*, blue/green/yellow staining) were not noted in this area. Visual indicators of coal tar -like saturation were noted on the boring logs for ETP-38 (7.5-8.5 feet bgs) and VHB-4 (8-12 feet bgs). Petroleum-like odors were noted in some borings located in this area (RCA-3, ETP-38, B07, B09, B11, MHA-4, and GZ-313D). Petroleum-like odors were generally noted coincident with the water table (depths of approximately 6 to 14 feet bgs). Coal tar-like odors were noted in two borings located in this area: RCA-3 (10-12 feet bgs) and VHB-4 (8-14 feet bgs). TVOCs readings from these borings ranged from ND to approximately 427 ppmv. Generally, TVOC readings increased with depth until approximately 2 feet below the water table and then subsequently decreased. Visual and olfactory evidence of coal tar-like impacts were not encountered in boring GZ-313D.

Soil TPH Fingerprint Results

Three (3) soil samples were submitted for TPH fingerprinting from RCA-3 (8-10 feet bgs), ETP-38 (8.5 feet bgs) and GZ-313D (18-20 feet bgs). The sample collected from RCA-3 was fingerprinted as “fuel oil”, the sample collected from ETP-38 was fingerprinted as “fuel oil mixed with coal tar” and the sample collected from GZ-313D was fingerprinted as “tar impacted hydrocarbons”. A summary of the TPH fingerprinting results is presented on Table V-1 (*Soil TPH Fingerprinting Results*) in **Appendix V**.

Groundwater and NAPL Gauging Results

There were two (2) monitoring wells located directly within the RCA-3 data gap investigation area (RCA-3 and GZ-313D). Based on historical elevation data from these monitoring wells, groundwater is expected to be encountered approximately 6 to 11 feet bgs in the area. A summary of groundwater elevation and NAPL gauging data for the wells within the area is presented in Table V-2 (*Groundwater and NAPL Gauging*) in **Appendix V**. Given the proximity to the cove, groundwater is expected to be tidally influenced (0.5 to 3.5 feet fluctuations have been observed). DNAPL had been historically detected in trace to 0.17 feet thicknesses in monitoring well RCA-3, with trace amounts only since 2002. DNAPL had not been encountered in GZ-313D. Both of these wells were decommissioned in 2016. A summary of historical DNAPL thicknesses in this area is presented on Table V-3 (*Historical DNAPL Thicknesses*) in **Appendix V**.

Groundwater Analytical Results

Fifteen (15) groundwater samples were collected from RCA-3 between 1994 and 2016 and submitted for analysis of VOCs, SVOCs, and TPH. One (1) groundwater sample was collected from GZ-313D in 2014 and submitted for analysis of VOCs. Naphthalene was detected in excess of the RIDEM GB Groundwater Objectives in one (1/15) sample collected from RCA-3 in 1994. Since 1994, groundwater samples collected from RCA-3 have had relatively low levels of detected VOCs and SVOCs with no elevated concentrations or exceedances of RIDEM criteria detected. The groundwater sample collected from GZ-313D had relatively low levels of VOCs detected with no elevated concentrations or exceedances of RIDEM criteria detected.

Groundwater samples were submitted for TPH analysis from RCA-3 in 1994 and 1996. The sample collected in 1994 had TPH detected at a concentration 27 mg/L and was fingerprinted as “fuel oil” and the sample collected in 1996 had TPH detected at a concentration of 11.9 mg/L and was fingerprinted as “a mixture of kerosene and PAHs in the C2-C3 range”.

Table V-4 (*Groundwater Analytical Data*) in **Appendix V** presents the analytical groundwater data collected in the area.



Conclusions

As noted above, the DNAPL that has been observed in RCA-3 is present in limited measurable thicknesses and does not appear to be mobile. DNAPL observations have been limited to trace quantities since 2002 and is not present in quantities that are recoverable. Dissolved phase groundwater impacts also have decreased since RCA-3 installation in 1994. GZ-313D was installed proximate to RCA-3 and indicated limited visual and olfactory evidence of impacts. The trace DNAPL that has been observed in RCA-3 is likely an isolated area and is very limited in extent and is not mobile.

3.1.4.8 MONITORING WELL RCA-21 LNAPL

Monitoring well RCA-21 was located in the LNG portion of the property, as shown on Figure W-1 (*Exploration Location Plan*) in **Appendix W** (*Data Gap – RCA-21 LNAPL*). RCA-21 was installed in 1996 by RCA as part of the Phase 1B Site Investigation activities. Remedial activities were completed in this area during 2001 and are documented in the November 2002 *Remedial Action Closure Report* prepared by VHB (as presented in **Appendix AA**). Remedial activities included significant source removal in the area downgradient of RCA-21 and the installation of an engineered cap over the area surrounding RCA-21. As presented in Table W-3 (*Historical LNAPL Thicknesses*) and Table W-4 (*Historical LNAPL Thicknesses and Recovery – RCA-21/RW-1*) in **Appendix W**, and further described below, measurable and recoverable thicknesses of LNAPL had been detected at RCA-21 between 2001 and 2014 (with thicknesses overall decreasing with time). To further define the extent of LNAPL in the area, GZA completed a test pit at the location of RCA-21 (TP-301) and replaced RCA-21 with a recovery well (RW-1) on June 17, 2014. Between 2014 and 2016, LNAPL was detected in RW-1 in thicknesses ranging from trace amounts to 0.02 feet. The following sections provide a background of area proximate to RCA-21, a discussion of the extent of LNAPL impacts in the area (field screening and observations of impacted soils, groundwater impacts and NAPL impacts) and our conclusions based on the information presented herein.

Twenty-five (25) explorations were performed proximate (for purposes of this discussion, limited to 100 feet in diameter) to RCA-21, to depths ranging from 6 to 96.5 feet bgs. These explorations are shown on the attached Figure W-1 in **Appendix W**. Four (4) explorations were performed for geotechnical purposes (B-21, B-22, SB-02, and SB-04). Seven (7) test pits were performed for waste characterization purposes (TP-2, TP-4, TP-9, TP-28, TP-29, TP-30, and TP-31). Three (3) recovery wells were installed (CHES RW-4, CHES RW-5 and RW-1). Eleven (11) explorations were performed for environmental purposes (RCA-21, RCA-21R1, RCA-40, RCA-R10, RCA-R11, RCA-R19, B35, B36, B45, B46 and TP-301). Two (2) monitoring wells and three (3) recovery wells were located proximate to RCA-21 (RCA-21, RCA-40, CHES RW-4, CHES RW-5 and RW-1). RCA-21R was the first attempt at drilling RCA-21; refusal was encountered at a depth of 5 feet and RCA-21 was relocated to the north. Four wells were located in the area (CHES RW-4, CHES RW-5, RW-1 and RCA-40) and were decommissioned in 2016 (as described below). No analytical samples were collected from the geotechnical borings and information regarding visual and olfactory indicators of residuals is limited. The geotechnical borings ranged in depth from 51 to 96.5 feet bgs, while the environmental borings ranged in depth from 6 to 20 feet bgs. Logs from both the geotechnical and environmental borings are included as **Appendix W**. The boring logs for RCA-R10, RCA-R11 and RCA-R19, waste characterization test pit logs or installation logs for recovery wells CHES RW-4 and CHES -5 were not available in the reports reviewed by GZA. Additionally, this report does not include any locations collected for geotechnical sampling (CPT data, etc.) purposes only.

Field Screening and Observations of Impacted Soils

Review of these boring logs indicates the presence of approximately 15 to 20 feet of fill underlain by organic silts, outwash deposits and glacial till. In general, the fill consists of sands and gravels with cinders, cinder ash, coke and coal fragments. Visual indicators of petroleum-like saturation were noted on the boring logs for RCA-21 (10-14 and 16-19 feet bgs), RCA-40 (8-10 feet bgs) and TP-301 (11-13 feet bgs). Black staining was indicated on most borings in the fill layers. Visual indicators of MGP-like residuals (*i.e.*, blue/green/yellow staining) were not noted in this area. “Asphaltic odors” were noted in boring RCA-40 from 16 to 20 feet bgs. Petroleum-like odors were noted in most borings located in the RCA-21 area (B-21, B-22, RCA-21, RCA-40, TP-301, SB-02 and SB-04). Petroleum-like odors were generally noted coincident with the water table



(depths of approximately 6 to 14 feet bgs). TVOCs readings from these borings ranged from ND to approximately 303 ppmv. Generally, TVOC readings increased with depth until approximately 2 feet below the water table and decreased thereafter. Borings located closer to the present-day foam building to the west of the truck skid (B35, B36, B45, and B46) generally did not note odors, petroleum-like or other indications of impacts. Refusal was noted in RCA-21R1 (10.5 feet bgs). There was no evidence of concrete or other structures in TP-301 which was completed in the location of RCA-21/21R.

Soil TPH Fingerprint Results

Three (3) soil samples were submitted for TPH fingerprinting from RCA-21 (4-6 and 8-10 feet bgs) and RCA-40 (8-10 feet bgs). The samples from RCA-21 (4-6 feet bgs) and RCA-40 (8-10 feet bgs) were identified as "Fuel Oil No.2" and the sample from RCA-21 (8-10 feet bgs) was identified as "Fuel Oil mixed with Coal Tar". A summary of the TPH fingerprinting results is presented on Table W-1 (*Soil TPH Fingerprinting Results*) in **Appendix W**.

The water table is approximately 6-14 feet bgs, depending on seasonal variations and tidal fluctuations. Based on visual and olfactory observations of impacts and TPH fingerprinting results, more petroleum-like impacts are noted at and above the water table, while a mix of petroleum-like and coal tar-like impacts were noted below the water table.

Groundwater and NAPL Gauging Data

There were two (2) monitoring wells present directly within the area (RCA-21 and RCA-40) and three (3) active recovery wells (CHES RW-4, CHES RW-5 and RW-1). As noted above, RCA-21 was replaced with RW-1 in 2014. The other four wells that were located in this area (CHES RW-4, CHES RW-5, RW-1 and RCA-40) were decommissioned in 2016 (as described below). Based on elevation data from these monitoring wells, groundwater is expected to be encountered approximately 6 to 11 feet bgs in the area. A summary of groundwater elevation and NAPL gauging data for the wells within the area is presented in Table W-2 (*Groundwater and NAPL Gauging*) in **Appendix W**. As noted above, groundwater is expected to be tidally influenced (0.5 to 3.5 feet fluctuations have been observed). LNAPL has been historically detected in the area in thicknesses ranging from trace amounts to 3.58 feet. DNAPL has not been historically detected in the area.

LNAPL was detected in RCA-21 in thicknesses ranging from 0.58 to 3.58 feet between 2011 and June 2014. LNAPL has been detected in RW-1 in thicknesses ranging from trace to 0.02 feet between June 2014 and May 2016. Between 2002 and 2016, LNAPL was observed in CHES RW-4, CHES RW-5 and RCA-40 in thickness ranging from trace to 2 feet. Since 2006, LNAPL has not been observed in thicknesses of more than 0.1 feet in these wells (CHES RW-4, CHES RW-5 and RCA-40). Table W-3 (*Historical LNAPL Thicknesses*) in **Appendix W** presents a summary of historical LNAPL thicknesses observed in the remaining monitoring wells proximate to RCA-21.

GZA gauged and recovered LNAPL from RCA-21 on an at least monthly basis during the rest of the second half of 2011, 2012, 2013 and the first half of 2014. During monthly gauging and recovery between 2011 and early 2014, the thickness of LNAPL was detected at thickness ranging from 0.07 to 1.89 feet, with the average thickness detected at over 1.2 feet and average recovery was approximately 1 gallon of LNAPL/water per month. During the first half of 2014, the LNAPL thickness was observed to decrease to less than 1 feet, with thicknesses ranging from 0.58 to 0.99 feet. RCA-21 was not gauged between 2003 and 2010, so historical records are limited. However, in 1996, RCA-21 gauging results indicated 0.58 feet in March 1996 and 0.23 feet in May 1996. As noted above, RCA-21 was replaced with RW-1 to aid in the recovery of LNAPL in June 2014. Between the 2014 installation of RW-1 and the decommissioning of RW-1 in May 2016, LNAPL was detected at thicknesses ranging from trace and 0.02 feet. Table W-4 *Historical LNAPL Thicknesses and Recovery – RCA-21/RW-1* in **Appendix W** presents a summary of LNAPL thicknesses and recovery of RCA-21/RW-1.

Groundwater Analytical Results

Four (4) groundwater samples were collected in the area proximate to RCA-21 between 1994 and 2005 and analyzed for VOCs, SVOCs, and TPH. Groundwater sampling has not been conducted in this area since 2005. Naphthalene was detected



in excess of the RIDEM GB Groundwater Objectives in a sample collected from RCA-21 in 1996. Table W-5 (*Groundwater Analytical Data*) in **Appendix W** presents the analytical groundwater data collected in the area.

Groundwater TPH Fingerprinting Results

Two of the four groundwater samples collected from the area were submitted for TPH analysis (one from RCA-21 and one from RCA-40). TPH was detected in both RCA-21 and RCA-40 groundwater samples at concentrations of 595 and 281 mg/L, respectively. Both samples were fingerprinted as “Fuel Oil”. Table W-6 (*Groundwater TPH Fingerprinting Results*) in **Appendix W** presents the groundwater TPH fingerprinting data collected in the area.

Conclusions

As noted, LNAPL was detected in other monitoring wells that are approximately within 100 feet of RCA-21 (CHES RW-4, CHES RW-5, and RCA-40), but in much lesser thicknesses. LNAPL was observed to begin to decrease in thickness during monthly gauging and recovery of RCA-21 between 2011 and 2014 and has only been detected in thicknesses of equal to or less than 0.02 feet in the replacement recovery well (RW-1) between 2014 and 2016. The LNAPL thickness that was observed in RCA-21 is likely an isolated source and does not appear to be migrating to the Providence River or off-Site.

3.1.4.9 DEEPER SITE INVESTIGATION

In general, environmental explorations completed at the Site have generally been shallow, extending to depths of approximately the water table (generally 4 to 8 feet bgs), regardless of the level of impacts noted during advancement. Several locations were identified with possible impacts at depth: proximate to VHB-1, proximate to RCA-3 (B-70A), proximate to the Former Compressor Building No. 1 near VHB-7 (SWBL-2, SWBL-6, SWBL-7, SWBL-8, B-37, B-43, GZA-205, and GZA-216), proximate to VHB-21, proximate to the LNG Vaporizer Building near ESS RW-3, 4, 5, and 6 (SWBL-9A, SWBL-14 and B-53), and proximate to the LNG generator area near VHB-20 (GZA-207 and GZA-208). In general, many of these borings indicate visual and olfactory impacts in the fill layer approximately 20 to 30 feet bgs, above the silt layer. GZA installed fourteen (14) additional deeper borings during 2014 to define the nature and extent of deeper impacts at the Site.

The following sections provide a background of the deeper investigation data, a discussion of the extent of impacts detected at depths of more than 20 feet (visual and olfactory impacts, groundwater and NAPL gauging results, groundwater analytical results and NAPL impacts) and our conclusions based on the information presented herein. Only data collected from borings that extended to a depth of 30 feet bgs or more are included in this section.

One hundred and forty-four (144) explorations were performed at the Site to depths greater than 30 feet bgs, to depths ranging from 30 to 174 feet bgs. These explorations are shown on the attached Figure X-1 (*Exploration Location Plan – Western Side of Site*) and Figure X-2 (*Exploration Location Plan – Eastern Side of Site*) in **Appendix X (Data Gap – Deeper Borings)**. One hundred and thirty (130) explorations were performed for geotechnical purposes (PGC-9, B-1, B-2, B-3, B-4, B-4A, B-5, B-6, B-7A, B-8, B-9, B-10, B-11, B-20, B-21, B-22, B-23, B-24, B-25, B-26, B-27, B-28, B-29, B-30, B-31, B-32, B-33, B-34, B-35, B-36, B-37, B-38, B-39, B-40, B-41, B-42, B-43, B-50A, B-51, B-52, B-53, B-60, B-61, B-62, B-63, B-64, B-65, B-66, B-70, B-70A, B-71, B-72, B-73, B-73A, B-74, B-76, B-77, B-78, B-79, B-80, B-100, B-102, B-201, B-204, B-205, B-206, B-207, B-212, SWBL-1, SWBL-2, SWBL-3, SWBL-4, SWBL-6, SWBL-8, SWBL-9A, SWBL-10, SWBL-11A, SWBL-12, SWBL-13, SWBL-14, SWBL-15, SWBL-16, SWBL-17, SWBL-18, GZ-1, GZ-2, GZ-3, GZ-5, GZ-7C, GZ-7E, GZ-101, GZ-102, GZ-201, GZ-202A, GZ-203, GZ-204A, GZ-205, GZ-206, GZ-207, GZ-208, GZ-209, GZ-210, GZ-211, GZ-212, GZ-213, GZ-214, GZ-215, GZ-216, GZ-217, SB-01, SB-02, SB-04, SB-06, Golder B-201, Golder B-202, Golder B-203, Golder B-204, Golder B-205, Golder B-206, Golder B-207, Golder B-208, Golder B-209, Golder B-210, Golder B-211, Golder B-212, PPS B-1, PPS B-2, GZ B-1, GZ B-2, GZ B-3, PRV-1, PRV-2, PRV-3, PRV-4 and PRV-5). Fifteen (15) explorations were performed for environmental purposes (GZ-301D, GZ-302D, GZ-303D, GZ-304D, GZ-309D, GZ-310, GZ-311D, GZ-312D, GZ-313D, GZ-314D, GZ-315D, GZ-318D, GZ-319D, and GZ-320D). Fourteen (14) “deep” monitoring wells were installed (GZ-301D, GZ-302D, GZ-303D, GZ-304D, GZ-309D, GZ-311D, GZ-312D, GZ-313D, GZ-314D, GZ-315D, GZ-318D, GZ-319D, and GZ-320D). Seven (7) “deep” wells (GZ-311D, GZ-312D, GZ-313D, GZ-314D, GZ-315D, GZ-318D and GZ-320D) were decommissioned in 2016



(as described below). Only TPH analytical fingerprinting samples were collected from the environmental borings. No analytical samples were collected from the geotechnical borings and information regarding visual and olfactory indicators of residuals and field screening results is limited. The geotechnical borings ranged in depth from 31.5 to 174 feet bgs, while the environmental borings ranged in depth from 30 to 36 feet bgs. Logs from both the geotechnical and environmental borings are included as **Appendix X**. This report does not include any locations collected for geotechnical sampling (CPT data, etc.) purposes only.

Field Screening and Observations of Impacted Soils at Depth

Review of these boring logs indicates the presence of approximately 15 to 20 feet of fill underlain by organic silt or peat, outwash deposits and glacial till. In general, the fill consists of sands and gravels with cinders, cinder ash, coke and coal fragments. The organic silt layer is not contiguous over the whole Site but is encountered in thicknesses of up to 60 feet closer to the Providence River, proximate to the LNG facility. Bedrock was not encountered in any of the explorations completed at the Site and is estimated to be more than 170 feet bgs.

Visual and olfactory indicators of petroleum-like impacts were noted in many areas of the Site closer to the natural water table. As noted above, many existing borings at the Site were terminated within vertical zones of visual and olfactory evidence of impacts. This section is intended to delineate the extent of detected impacts at depth.

The non-contiguous organic silt/peat layer at the Site appears to be acting as a “confining layer” to prevent impacts from migrating vertically and evidence of this pattern was noted in many borings across the Site (B-4, B-6, B-7A, B-8, B-21, B-22, B-24, B-28, B-37, B-38, B-43, B-60, B-70, B-70A, B-71, B-72, B-73, B-74, SWBL-1, SWBL-3, SWBL-9A, GZ-7, GZ-201, GZ-203, GZ-216, GZ-303D, GZ-304D, GZ-309D, GZ-310, GZ-311D, GZ-312D, GZ-314D, GZ-315D, GZ-318D, GZ-320D, SB-01, SB-02, SB-04, SB-06, B-201, B-202, B-203, B-204, PRV-1, PRV-2, PRV-3, PRV-4 and PRV-5).

More shallow impacts were noted in several borings without a “confining layer” and generally limited to overlying fill (B-64, SWBL-16, GZ-204A, GZ-209, GZ-210, GZ-212, GZ-213, GZ-214, GZ-302D, GZ-313D, GZ-319D, B-205, B-206, B-208, B-209, B-211, B-211 and B-212).

Deeper impacts (ranging from 25 to 55 feet bgs) were noted in several borings (B-41, SWBL-4, SWBL-6, SWBL-10, SWBL-12, SWBL-13, SWBL-14, GZ-202A, GZ-205, GZ-207, GZ-208, B-210, PPS B-1, PPS B-2 and GZ B-2), which appear to be generally vertically confined by glacial till in the area. Of these borings, most of these deeper impacts (45 to 55 feet bgs) were noted in explorations (SWBL-6, SWBL-10, SWBL-12, SWBL-13, SWBL-14, B-210, PPS B-2, and GZ B-2) performed downgradient of Former Compressor House No.1 and/or historical tar pits/wells/tanks and appear to be vertically confined by the glacial till.²¹Groundwater and NAPL Gauging Data

Fourteen (14) monitoring wells were screened at depths greater than 20 feet bgs (GZ-301D, GZ-302D, GZ-303D, GZ-304D, GZ-309D, GZ-311D, GZ-312D, GZ-313D, GZ-314D, GZ-315D, GZ-318D, GZ-319D, and GZ-320D) at the Site. As noted above, seven (7) “deep” wells (GZ-311D, GZ-312D, GZ-313D, GZ-314D, GZ-315D, GZ-318D and GZ-320D) were decommissioned in 2016 (as described below). Each of these monitoring wells were gauged at least seven (7) times between 2014 and 2016. NAPL was not detected. Table X-2 (Summary of *Groundwater and NAPL Gauging Results*) in **Appendix X** presents the groundwater and NAPL gauging results.

Several monitoring well couplets were installed at the Site (RCA-12R and GZ-301D, GZ-302S and GZ-302D, GZ-303S and GZ-303D, RCA-12R and GZ-304D, VHB-1 and GZ-309D, VHB-10 and GZ-320D, VHB-3 and GZ-311D, GZ-312S and GZ-312D, RCA-3 and GZ-313D, VHB-21 and GZ-318D, VHB-20 and GZ-319D, GZ-314S and GZ-314D and RCA-5 and GZ-315D). The data

²¹ Note that GZA attempted to install a deeper environmental boring in this area in 2014 (GZ-317D) but hit refusal many times. There are many obstructions in this area of the Site.



generally indicates that groundwater flow at the Site has a generally intermittent (upward and downward) component of flow, which indicates that the majority of wells on Site are likely at least slightly tidally influenced.

Groundwater Analytical Results

Forty-seven (47) groundwater samples were collected from these “deep” wells (GZ-301D, GZ-302D, GZ-303D, GZ-304D, GZ-309D, GZ-311D, GZ-312D, GZ-313D, GZ-314D, GZ-315D, GZ-318D, GZ-319D, GZ-320D, and GZ-500D) between 2014 and 2022 and analyzed for VOCs. Naphthalene and benzene were detected in excess of the RIDEM GB Groundwater Objectives in samples collected from monitoring wells GZ-314D (screen depth of 24 to 34 feet bgs – organic silt), GZ-315D (screen depth of 20 to 30 feet bgs – organic silt) and GZ-318D (screen depth of 20 to 30 feet bgs – organic silt). Vinyl chloride was detected in excess of the RIDEM GB Groundwater Objectives in a sample collected from GZ-301D (screen depth of 20 to 30 feet bgs – peat / organic silt / outwash sands).²²

Table X-1 (*Groundwater Analytical Data*) in **Appendix X** presents the analytical groundwater data collected in the area.

Conclusions

In general, historical environmental explorations completed at the Site have generally been shallow, extending to depths of approximately the water table (generally 4 to 8 feet bgs). As noted above, the soils at the Site generally consist of fill, underlain by a non-contiguous layer of organic silt / peat, outwash and glacial till. Results of recent Supplemental SI investigations indicate that deeper impacts were noted proximate to Former Compressor House No. 1 (close to the center of the Site), which appear to be vertically limited to the depth of the glacial till in the area (approximately 55 feet bgs). Impacts at depth were limited to 30-35 feet bgs in other areas of the Site and appear to be vertically confined by the presence of organic silt / peat in the area. The organic silt / peat at the Site has generally been detected closer to the Providence River at shallower depths than the glacial till and is likely limiting the horizontal migration of any deeper impacts to the Providence River.

In conclusion, although deeper impacts were detected in the central portion of the Site, the impacts appear to be horizontal and vertically limited and do not appear to be migrating off Site.

3.2 GROUNDWATER MONITORING PROGRAM (2003 – 2022)

VHB (on behalf of the NEG) implemented a groundwater monitoring program at the Site in 2003. The groundwater monitoring program was briefly described in the December 1998 *RAWP* submitted to RIDEM. The following reports have been submitted to RIDEM to present results of the groundwater monitoring:

- *Groundwater Monitoring Report – 2003 to 2005* prepared by VHB on behalf of TNEC dated December 2005;
- *Groundwater Monitoring Report – 2008* prepared by VHB on behalf of TNEC dated June 2008;
- *Groundwater Monitoring Report – 2009* prepared by GZA on behalf of TNEC dated February 2010;
- *Groundwater Monitoring Report – 2010* prepared by GZA on behalf of TNEC dated August 2010;
- *Groundwater Monitoring Report – January to June 2011* prepared by GZA on behalf of TNEC dated July 2011;
- *Groundwater Monitoring Report – July to December 2011* prepared by GZA on behalf of TNEC dated September 2012;

²² Vinyl chloride is not expected to be a constituent of concern associated with the Site. The detection of vinyl chloride at the Site is expected to be from off-Site impacts.



- *Groundwater Monitoring Report-2012* prepared by GZA on behalf of TNEC dated August 2013;
- *Groundwater Monitoring Report-2013* prepared by GZA on behalf of TNEC dated September 2014;
- *Groundwater Monitoring Report – 2014 through 2017* prepared by GZA on behalf of TNEC dated January 2021;
- *Groundwater Monitoring Report – 2018* prepared by GZA on behalf of TNEC dated January 2021;
- *Groundwater Monitoring Report – 2019* prepared by GZA on behalf of TNEC dated January 2021;
- *Groundwater Report – 2020* prepared by GZA on behalf of TNEC dated February 2021;
- *Groundwater Monitoring Report – 2021* prepared by GZA on behalf of TNEC dated September 2022; and
- *Groundwater Monitoring Report – 2022* prepared by GZA on behalf of TNEC dated June 2023.

The most significant groundwater impacts (dissolved phase and observations of NAPLs) were observed in areas at the Site generally coincident with areas proximate to Former MGP operations and subsurface soil impacts. In these locations, NAPLs and benzene, ethylbenzene, toluene and naphthalene were consistently present at concentrations above the GB Groundwater Objective. No exceedances have been observed in large areas of the Site, including the northern and eastern portions of the Site along the Providence River and the southeastern portion of the Site proximate to the area occupied by Holcim. Results of groundwater monitoring have generally remained consistent at the Site.

A summary of the groundwater monitoring conducted at the Site between 2003 and 2022 is included in **Appendix E** (*Summary of Regular Groundwater Monitoring (2003 through 2022)*). For further information related to groundwater monitoring, please refer to the reports previously referenced.

3.3 GROUNDWATER MONITORING WELL DECOMMISSIONING AND REPLACEMENT ACTIVITIES

3.3.1 Monitoring Well Decommissioning

As presented in the May 26, 2016 *Proposed Upcoming Groundwater Monitoring Activities Letter* prepared by GZA on behalf of TNEC which was submitted to RIDEM, several large facility projects were proposed at the Site over several years which required the closure of certain monitoring wells at the Site. Following submittal of this letter to RIDEM, TNEC initiated well closure activities in advance of the Holder 18/21 Capping Project (Section 4.4); Dike Access Road project (Section 4.5) and Liquefaction Project (Section 4.6). Monitoring well closure activities were conducted at the Site between June 27, 2016 and July 9, 2016. TNEC decommissioned forty-two (42) of the seventy-five (75) available monitoring wells located at the Site: RCA-3, RCA-5, RCA-11, RCA-14, RCA-20, RCA-29, RCA-32, RCA-33, RCA-38, RCA-40, VHB-3, VHB-6, VHB-7, VHB-8R, VHB-10, VHB-13, VHB-18, VHB-21, VHB-22, VHB-23, CHES RW-1, CHES RW-2, CHES RW-3, CHES RW-4, CHES RW-5, RW-1, ESS RW-1, ESS RW-2, U-1, GZ-204, GZ-216, GZ-311D, GZ-312D, GZ-312S, GZ-313D, GZ-314D, GZ-314S, GZ-315D, GZ-318D, GZ-320D, GZ-401, and GZ-403. Two (2) inactive monitoring wells (RCA-7 and RCA-13) were also decommissioned during this effort. Locations of the monitoring wells that were decommissioned are depicted on Figure 5A (*Groundwater Monitoring Wells*). The wells were abandoned by Geologic Earth Exploration, Inc. of Norfolk, Massachusetts²³. Consistent with Appendix 1 of the Rhode Island Water Quality Rules (<http://www.dem.ri.gov/pubs/regs/regs/water/gwqual10.pdf>), the monitoring wells were abandoned via splitting or removing the PVC well casing and then filling the remaining borehole with grout. Additionally, as part of the seawall/bulkhead repair

²³ TNEC received a CRMC FONSI for the monitoring well decommissioning work. A copy of the CRMC permit is provided in Appendix I (*CRMC Permit A2016-06-007 – Well Decommissioning Activities*).



project, monitoring well GZ-201 was temporarily decommissioned in accordance with the Water Quality Rules. Logs documenting the well abandonment activities are presented in **Appendix H (Well Decommissioning Logs)**.

3.3.2 Monitoring Well Replacement

Following completion of certain facility work, several of the monitoring wells that were decommissioned in 2016 were replaced. Monitoring well replacement work was completed in phases under the July 2021 and December 2022 *Replacement Monitoring Wells Installation Work Plans* submitted to RIDEM.

2021 Replacement Program

In accordance with the July 2021 Work Plan, five (5) replacement monitoring wells were installed (GZ-500S, GZ-500D, GZ-501S, GZ-502S, and GZ-503S) in September 2021, to replace select monitoring wells within the former Holder 18/21 area (RCA-11, VHB-8R, VHB-10, VHB-18, GZ-320D, GZ-401, and GZ-403) and to supplement existing monitoring well coverage across the Site.

Replacement monitoring wells (GZ-500S, GZ-501S, GZ-502S) were installed on September 14, 2021, and replacement monitoring wells (GZ-500D and GZ-503S) were installed on September 15, 2021. All the newly installed wells were developed (removal of sediment build-up in the well) in September 2021 using the surge/ bailing and pumping technique. The wells were developed until the turbidity level was <5 NTU. GZA generated a total of seventy-six (76) gallons of purge water during well development which was containerized in 55-gallon drums for off-Site disposal. Groundwater samples were collected from the newly installed wells as part of the November 2021 sampling event. A summary of the monitoring well installation (including installation logs) is included in the 2021 Monitoring Report submitted to RIDEM on September 9, 2022.

2023 Replacement Program

In accordance with the December 2022 Work Plan, nine (9) replacement monitoring wells were installed (GZ-311DR, GZ-313DR, GZ-315DR, GZ-318DR, RCA-3R, RCA-5R, VHB-3R, VHB-21R, and VHB-22R) as shown on the attached **Figures 5A and 5B**. All nine explorations were executed via push driven Geoprobe methods. Wells GZ-311DR, GZ-313DR, GZ-315DR, GZ-318DR, RCA-3R, RCA-5R, VHB-3R, VHB-21R, and VHB-22R were installed in February 2023.

All borings were in advanced of a depth of approximately 15 feet below ground surface (bgs), except for GZ-311DR, GZ-313DR, GZ-315DR, and GZ-318DR which were advanced to approximately 30 feet bgs. Borings were performed via GeoProbe drilling techniques with dedicated continuous sampling sleeves. A GZA field engineer was onsite to record boring activities, collect samples for field screening and characterization, and complete boring logs at each location. The recovered soil from each sample interval was logged using modified Burmeister classification system, field-screened for presence of total volatile organic compounds (TVOCs) with a Photoionization Detector (PID) and evaluated for the presence of staining and odors. GZA also performed photo-documentation of each soil sampling interval. As these were replacement monitoring wells, no analytical testing for soil was conducted.

The wells were constructed of 2-inch diameter Schedule 40 PVC in accordance with standards specified in Rhode Island Water Quality Regulations (<https://rules.sos.ri.gov/regulations/part/250-150-05-3>) to a total depth of approximately 15 feet below ground surface (bgs) (shallow wells RCA-3R, RCA-5R, VHB-3R, VHB-21R, and VHB-22R) or 30 feet bgs (deep wells GZ-311DR, GZ-313DR, GZ-315DR, and GZ-318DR). For each shallow well, the screen was set to span the natural water table encountered during drilling (typically within the fill unit or underlying sand unit – assumed to be approximately 10 to 12 feet bgs). For the deep well, the screen was set with midpoint at least 10 feet below the natural water table encountered during drilling. A sand filter pack was installed in the annular space around the well screen and extended approximately 1-foot above the well screen. An approximate 1-foot (minimum) bentonite seal was placed above the filter pack and the remaining borehole above the bentonite was backfilled with clean filter sand. Wells GZ-311DR, GZ-313DR, GZ-315DR, GZ-318DR, RCA-3R, RCA-5R, VHB-3R, VHB-21R, and VHB-22R were completed with road boxes.



All the newly installed wells were developed (removal of sediment build-up in the well) in March 2023 using the surge/ bailing and pumping technique. The wells were developed until the turbidity level was <5 NTU. GZA generated a total of one-hundred and fifty-one (151) gallons of purge water during well development which was containerized in 55-gallon drums for off-Site disposal. Groundwater samples will be collected from the newly installed wells as part of the 2023 sampling event. Boring logs for the installation of these monitoring wells are included in **Appendix Z**.

As part of the seawall/bulkhead repair project (completed November 2023) one well, GZ-201 was decommissioned to accommodate construction activities. The contractor for the bulkhead project J. F. Brennan, Inc. subcontracted Geologic Earth Exploration Inc. to reinstall GZ-201 at the end of the project and installed an additional well at the Holcim Facility (GZ-202). These two wells were installed with a geoprobe drill rig. The well installation logs are included in **Appendix Z**.

4.0 COMPLETED REMEDIAL ACTIONS (1995 – 2022)

Several remedial actions were completed at the Site between 1995 and 2002 by PGC and NEGC. Remedial actions included UST closure activities, source removal, soil excavation and capping. These activities have been documented in reports previously submitted to RIDEM. Figure 7 depicts the areas of the Site where remedial activities have been performed and Figure 8 presents the location of installed RIDEM-approved engineered caps (or equivalent). Remedial activities conducted between 1998 and 2001 were completed consistent with the December 1998 RIDEM-approved *RAWP* or subsequent modifications. The following reports were prepared to present results of these remedial actions:

- *Condensate Tank Closure Status Report and Remedial Action Plan for Compressor Building No. 2* prepared by RCA on behalf of PGC dated February 1995;
- *UST Closure Assessment* prepared by HEI on behalf of the PGC dated October 1995;
- *Remedial Action Report for Short Term Measure Performed at the Providence Gas Company* prepared by RCA on behalf of PGC dated June 1996;
- *UST Closure Assessment* prepared by HEI on behalf of the PGC dated September 1998;
- *Subsurface Investigation and Proposed Remediation Algonquin Generator Construction Area* prepared by ESS on behalf of the PGC dated October 1999;
- *Summary Letter* prepared by PGC dated May 2001;
- *Remedial Action Closure Report* prepared by VHB on behalf of the NEGC dated November 2002;
- *Remedial Action Closure Report* prepared by VHB on behalf of the NEGC dated December 2002;
- *SIR* prepared by VHB on behalf of the NEGC dated April 2003;
- *Holder 18/21 Capping Project Short Term Response Action Completion Report* prepared by GZA on behalf of TNEC dated April 2017;
- *Dike Access Road Short Term Response Action Completion Report* prepared by GZA on behalf of TNEC dated February 2020; and



- *Fields Point Liquefaction Project Short Term Response Action Completion Report* prepared by GZA on behalf of NGLNG LLC dated March 2023.

A summary of each of these completed remedial actions is included in **Appendix F** (*Summary of Completed Remedial Actions (1995 through 2002)*). For further information related to these completed remedial actions, please refer to the reports previously referenced.

In addition to the above, several more recent remedial actions have been completed at the Site between 2010 and 2022. These activities have been completed by TNEC and documented in reports submitted to RIDEM, as summarized in more detail below. Figure 7 depicts the areas of the Site where these remedial activities were completed, and Figure 8 presents the location of completed RIDEM-approved engineered caps and engineered controls.

4.1 DEMOLITION AND DECOMMISSIONING OF GASHOLDERS NOS. 18 AND 21

Former Gasholder No. 18 was built in 1911 and measured approximately 220 feet in diameter and 28 feet tall in the “closed” position (6 MMcf). Former Gasholder No. 21 was built in 1947 and measured approximately 163 feet in diameter and 40 feet tall in the “closed” position (3 MMcf). When MGP operations ceased at the Site, both Gasholders were utilized for storage of natural gas until the 1980s.

Between August 18, 2009 and May 19, 2010, TNEC completed the decommissioning and demolition of the two Former Gasholders. In general, this work included Site preparation; Gasholder dewatering, water treatment, and discharge to the sanitary sewer; sludge removal and dewatering; waste characterization; waste management; demolition; demolition material management; backfill and Site restoration, final Site cleaning, and demobilization.

The response action was documented in the *July 2010 Construction Completion Report for Demolition and Decommissioning of Gasholders Nos. 18 and 21* prepared by Brown and Caldwell on behalf of TNEC.

4.2 DRAINAGE REHABILITATION AREA

In February of 2012, RIDEM notified TNEC that they had noted a “sheen” in a catch basin (CB-01) located in the northwestern portion of the Site while investigating a release to the Providence River to the north of the Site. TNEC and RIDEM sampled the catch basin to characterize the impacts and deployed oil snares and absorbent booms as a temporary response action. In March of 2012, TNEC contracted Inland Waters to perform a camera survey of the lines associated with the catch basin. The catch basin was determined to flow in a westerly direction (towards Allens Avenue) and is connected to only one upgradient catch basin. The upgradient catch basin (CB-02) had evidence of closed connections. Based on review of available information, it was surmised that this piping connected to former buildings on Site. The flow eventually discharges to a manhole (MH-1) in the northwestern corner of the Site. This manhole discharges to a 102” diameter sanitary sewer line located in Allens Avenue which eventually discharges to the NBC Wastewater Treatment Plant located on Ernest Street in Providence, RI. Evidence of sheen / product was also noted within the manhole structure at a depth of approximately 14.5 feet bgs on the western wall of MH-1.

In response to these observations, GZA collected samples of the sheen / product from the catch basins (CB-01 and CB-02) and MH-1; refer to Figure 3A. A product sample was collected from MH-1 in December 2012 and sheen samples were collected from both CB-02 and CB-01 in February and March 2012. The sheen samples were analyzed by New Fields Laboratory of Rockland, Massachusetts and were identified as being comprised of complex mixtures of variably weathered petroleum, with the major component being “middle distillate petroleum” (i.e., diesel fuel, or fuel oil #2). The source of this sheen / product is unknown. Laboratory reports from New Fields Laboratory are included in **Appendix O** (*New Fields Chemical Fingerprinting Results*) (noted as May 25, 2012 New Fields Chemical Fingerprinting Summary Letter and Analytical Report and March 21, 2013 New Fields Chemical Fingerprinting Summary Letter and Analytical Report).



To address the observed sheens, TNEC performed certain rehabilitation activities of the on-Site drainage system in the northwestern corner of the Site between May 2012 and January 2013. These activities consisted of cleaning and in-situ sealing of the drainage structures and piping associated with the stormwater system between MH-1 and CB-02. Rehabilitation activities were completed by Inland Waters of Johnston, Rhode Island. Prior to the in-situ sealing of the interior portions of the catch basin structures, the structures were thoroughly cleaned. The initial cleaning consisted of vacuum extraction and excavation of water, sediment, and foreign debris from all drainage structures. Following the cleaning process, catch basins and manhole structures were sealed in place to mitigate groundwater intrusion utilizing acrylamide grout, hydraulic cement and a spray-on epoxy system. In-situ sealing of the existing stormwater conveyance system was performed utilizing both acrylamide grout injection and cured in place lining for the vitrified clay piping conveyance system. Prior to pipelining and sealing, the stormwater collection piping was cleaned in the same manner as the catch basin structures. Approximately 290 feet of piping was sealed utilizing a cured-in-place liner.

Visual observations/sampling of the stormwater catch basins CB-01 and CB-02 was conducted once per week for a period of one month after the majority of rehabilitation activities were completed (February 2013). Visual observations/sampling consisted of sampling the water in the structure (if possible) for odors, sheens and turbidity. If the structure was dry, olfactory and visual observation from above was conducted for odors and significant sheens, respectively. After one month of weekly visual/olfactory observations, the frequency was conducted on a monthly basis to ensure that no infiltration of petroleum was occurring. No evidence of petroleum was observed in CB-01. Between February and November 2013, no evidence of petroleum was observed in CB-02. In November 2013, several “weeps” of petroleum material was observed infiltrating into CB-02. In December 2013 and January 2014, Inland Waters sealed the “weep” areas with acrylamide grout and hydraulic cement.

Between January 2014 and September 2022 containment booms and snares were maintained in the catch basins to contain any petroleum sheen. Although some sheening has been observed in CB-02 (the source of this sheen is unknown), no sheening has been observed in downgradient structures (CB-01 and MH-01).

Additionally, as part of the existing NBC sewer connection permit for the Natural Gas Regulation Facility building, annual wet weather sampling was conducted in MH-01 between 2013 and 2021 when the permit requirement to conduct these observations was no longer required. No evidence of sheen or product has been observed.

4.3 NATURAL GAS LEAK REPAIR AREA

In January 2013, TNEC/GZA was notified of a natural gas leak in the western portion of the Site by TNEC’s gas operations personnel. The gas leak was detected proximate to an occupied building and was classified as an emergency by TNEC. The gas leak was traced to an 18” diameter ductile iron natural gas pipe leaking at approximately 12 feet bgs. Dewatering was necessary to repair the leaks in the piping. During repair operations, sheens were observed in the excavation intermittently. On January 29, 2013, the sheen was sampled by GZA and analyzed by New Fields Laboratory of Rockland, Massachusetts and was determined to be comprised primarily of “heavy middle distillate” (e.g., cutting oil, light lubricating oil, or gear oil), with low levels of pyrogenic poly-aromatic hydrocarbons (PAHs). The source of this sheen / product is unknown. The laboratory report from New Fields Laboratory is included in **Appendix O** (noted as February 26, 2013 New Fields Chemical Fingerprinting Summary Letter and Analytical Report).

Additional gas leaks / upgrades have been repaired by TNEC in this area in 2015, 2016 and 2017. Similar type sheens were observed when the excavation was left open overnight and quickly dissipated during dewatering activities.

4.4 HOLDER 18/21 CAPPING PROJECT STRAP

The Holder 18/21 Capping Project was performed to cap an area of the Site that had surface soil exceedances of the RIDEM I/C-DEC. The Holder 18/21 Capping Project was described in the April 2016 *STRAP – Holder 18/21 Capping Project* prepared by GZA on behalf of TNEC and May 2016 *STRAP Addendum – Holder 18/21 Capping Project* prepared by GZA on behalf of TNEC. The *STRAP* activities were approved by RIDEM with a May 18, 2016 *Short Term Response Action Approval Letter* issued to TNEC.



The majority of the Holder 18/21 Capping Project was completed in the Fall of 2016. The *Holder 18/21 Capping Project STRAP* activities included clearing and grubbing, installing erosion and sedimentation controls, miscellaneous demolition activities, select spot excavation, grading and off-Site disposal of excess materials, installation of an engineered cap (landscaped cap, asphalt, and crushed stone), and restoration activities (hydroseeding and fencing). The installation of the engineered cap included on-Site infiltration of treated stormwater via construction of a forebay and vegetated sand filter system.

Engineered caps were designed to mitigate direct exposure to underlying impacted soils across the approximate 201,537 SF (4.6 acres) *Holder 18/21 Capping Project STRAP* Area and limit further degradation of groundwater in certain areas with asphalt and/or liner caps. The following is a description of the engineered caps that were installed as part of this project:

- Asphalt Engineered Cap (approximately 119,745 SF – 2.75 acres): the engineered cap consisted of 2-inches of binder course asphalt overlain with 2-inches of top course.
- Asphalt Engineered Cap underlain with a geosynthetic liner system (approximately 21,960 SF – 0.5 acres): the engineered cap consisted of a geosynthetic liner system (textured linear low density polyethylene (LLDPE) with an 8-ounce non-woven geotextile cushion layer above and below), overlain by at least 8-inches of imported processed gravel and finished with asphalt (2-inches of binder course overlain with 2-inches of top course).
- Topsoil Engineered Cap underlain with a geosynthetic liner system (approximately 6,381 SF – 0.15 acres): the engineered cap consisted of a geosynthetic liner system (textured LLDPE with an 8-ounce non-woven geotextile cushion layer above and below), overlain by at least 6-inches of imported granular fill and finished with at least 6-inches of imported topsoil. Hydroseeding of this cap was performed as part of Site restoration.
- Riprap Engineered Cap (approximately 11,296 SF – 0.26 acres): the engineered cap consisted of an 8-ounce non-woven geotextile overlain by at least 12-inches of imported Rhode Island Department of Transportation (RIDOT) R-3 Riprap.
- Topsoil Engineered Cap (approximately 20,822 SF – 0.48 acres): the engineered cap consisted of an 8-ounce non-woven geotextile overlain by overlain by at least 6-inches of imported granular fill and finished with at least 6-inches of imported topsoil. Hydroseeding of this cap was performed as part of Site restoration.
- 2-inch Crushed Stone Engineered Cap (approximately 21,333 SF – 0.49 acres): the engineered cap consisted of an 8-ounce non-woven geotextile overlain by at least 6-inches of imported granular fill and finished with at least 6-inches of imported 2-inch crushed stone.

During the Holder 18/21 remedial activities, a total of approximately 801.85 tons of excess soil was excavated, transported and recycled at ESMI in Loudon, NH for thermal desorption.

The Holder 18/21 Capping Project was documented in the April 2017 *Short Term Response Action Completion Report – Holder 18/21 Capping Project* prepared by GZA on behalf of TNEC. This report was submitted to RIDEM on April 28, 2017.

4.5 DIKE WALL ACCESS ROAD PROJECT STRAP

The Dike Wall Access Road Capping Project was proposed to cap an area for a new access road for the LNG portion of the Site. The Dike Wall Access Road Capping Project was described in the June 2016 *STRAP – Dike Access Road* prepared by GZA on behalf of TNEC and the August 2016 *STRAP Addendum – Dike Access Road* prepared by GZA on behalf of TNEC. The *STRAP* activities were approved by RIDEM with the August 25, 2016, *Short Term Response Action Approval Letter* issued to TNEC. The Dike Wall Access Road Capping Project was completed in January 2020.



The Dike Wall Access Road Capping Project activities include installing erosion and sedimentation controls, grading and off-Site disposal of excess materials and installation of an engineered cap. The construction of the engineered cap included on-Site infiltration of treated stormwater via the construction of an engineered underground treatment/infiltration unit.

Engineered caps were designed to mitigate direct exposure to underlying impacted soils across the approximately 39,000 SF (0.90 acres) Dike Wall Access Road Capping Project area.

As part of the Dike Wall Access Road Capping Project, a total of approximately 3,232 tons of soil of excess soil was excavated, transported and disposed of at ESMI in Loudon, NH for thermal desorption.

4.6 LIQUEFACTION PROJECT STRAP

The Liquefaction Project STRAP was prepared to establish soil and groundwater management procedures associated with ground disturbance activities for the Proposed Liquefaction Plant in the LNG portion of the Site. The Project was described in the May 2017 *STRAP – Proposed Liquefaction Project* prepared by GZA on behalf of TNEC. GZA also prepared and submitted a STRAP Addendum for the project in October 2017. Figure 7 depicts the areas of the Site where these remedial activities have been completed or are ongoing and Figure 8 presents the location of RIDEM-approved engineered caps and controls that have been installed.

The Liquefaction Project STRAP activities include limited clearing and grubbing, installing erosion and sedimentation controls, testing of and import of clean fill materials, grading and off-Site disposal/recycling of excess materials, management of excess soil and groundwater during earthwork activities for pile installations and utility installations (water, drainage, natural gas and both overhead and underground electric), installation of engineered caps and restoration activities (fencing and gate installation). All areas of soil and groundwater disturbance will be capped as described herein to mitigate direct exposure to underlying impacted soils consistent with RIDEM requirements. The installation of engineered caps includes stormwater management via a forebay and lined sand filter with discharge of stormwater to the Providence River.

Engineered caps were designed to mitigate direct exposure to underlying impacted soils across the approximately 150,317 SF (3.45 acres) Liquefaction Project STRAP area. The following is a description of the engineered caps that are proposed to be installed:

- Asphalt Engineered Cap (approximately 41,088 SF – 0.94 acres): the engineered cap will consist of at least 4-inches of asphalt underlain by at least 6-inches of processed gravel, sand or other clean imported granular fill;
- Riprap Engineered Cap (approximately 5,351 SF – 0.12 acres): the engineered cap will consist of a non-woven geotextile overlain by at least 12-inches of imported Riprap;
- Concrete Engineered Cap (approximately 27,275 SF – 0.63 acres): the engineered cap will consist of a competent concrete surface consisting of at least 4-inches of concrete underlain by at least 6-inches of clean imported granular fill;
- Crushed Stone Engineered Cap (approximately 73,333 SF – 1.68 acres): the engineered cap will consist of at least 18-inches of imported granular fill and finished with 6-inches of imported 2-inch crushed stone; and
- Sand Filter (approximately 3,270 SF – 0.08 acres): the sand filter will consist of a LLDPE liner system, overlain by at least 12-inches of $\frac{3}{8}$ " pea stone, overlain by a geotextile and finished with at least 18-inches of clean imported C-33 sand. As noted above, no infiltration is proposed under this STRAP.

As part of the Liquefaction Project STRAP activities, excess soil was transported and recycled at ESMI in Loudon, NH for thermal desorption. The STRAP for this project was approved by RIDEM on October 27, 2017 and construction began in



December 2018. STRAP activities were completed in 2022, GZA submitted a STRAP Completion report for the Liquefaction Project on March 21, 2023.

4.7 SEAWALL

TNEC has completed construction of a new seawall/bulkhead along the shoreline of the Site. This work was performed in accordance with the 2012 SMP, and was restored with an engineered cap. Figure 7 depicts the areas of the Site where these remedial activities are complete, and Figure 8 presents the location of RIDEM-approved engineered caps and controls that have been installed for the Seawall Project. The soil and groundwater management as well as restoration activities for the seawall project will be summarized in an Annual SMP compliance report going forward.

4.8 PROPOSED LNG MODERNIZATION PROJECTS

National Grid LNG is currently planning several projects within their leased portion of the Site to maintain the LNG operations for the future. These projects include replacing the existing vaporizers and associated building, replacing the boil off gas compressors and associated building, building a new control room and administrative building, constructing a new storage building, updating the electrical supply by installing a new power distribution center, making improvements to the flood mitigation measures to protect critical infrastructure, and installing stormwater management systems to treat runoff from new impervious areas. For each of these projects the project area will be progressively capped in accordance with RAA#2, described below. These projects are currently in the design phase with construction expected to begin in 2025 and will take several years to complete. The earthwork associated with these projects will be performed in accordance with the 2012 SMP.

4.9 CURRENT ENGINEERED CONTROLS AT THE SITE

Approximately 74% (30.3 acres of a total 41 acres) of the Site has been remediated via a combination of impacted soil removal and installation of RIDEM approved engineered caps Figure 8 was prepared to present the current status of engineered controls at the Site.

Engineered caps that have been installed at the Site consist of the following:

- At least 24-inches (2 feet) of clean soil or stone material²⁴ (7.24 acres);
- At least 12-inches (1 foot) of clean soil or stone material underlain with a non-woven geotextile barrier (4.26 acres);
- Building footprint (1.98 acres);
- Concrete surface (1.33 acres);
- Asphalt surface (14.82 acres); and
- LLDPE liner system overlain with clean fill or asphalt (0.65 acres).

Additionally, while there are portions of the existing LNG facility that are not currently capped with a RIDEM-approved engineered cap, the entirety of the LNG facility (16.36 acres) is surrounded by a double layer of chain link fencing with razor wire which is inspected on a daily basis. Access to this portion of the Site is limited to trained, on-Site personnel. Ground cover within this portion of the LNG facility consists of a layer of crushed stone; no surface soils are exposed. The combined security fencing and crushed stone associated with the LNG facility are considered to constitute an effective alternative

²⁴ Soil at least meeting Remedial Objectives as defined in Section 1.9.2 of the Remediation Regulations and/or RIDEM Residential Direct Exposure Criteria (R-DEC).



engineered control. The total area that is effectively controlled via engineered caps and the LNG security fencing is approximately 33.5 acres or 82% of the Site.

5.0 NATURE AND EXTENT OF OBSERVED IMPACTS

This section presents observations made and the results of soil and groundwater analytical testing performed during the 2014-2016 supplemental Site investigations combined with historical Site investigation results performed between 1994 and 2014, as well as the results of groundwater monitoring from 2016 to 2022. These results are subdivided into the five categories in the following subsections: surface soils, subsurface soils, NAPL observations and groundwater.

This section presents GZA's interpretation of the data in terms of the nature and extent of impact, including the distribution of Method 1 Regulatory exceedances. This regulatory exceedance comparison considered the current environmental setting and use of the property, as well as foreseeable future use of the property. Accordingly, the data were compared to the RIDEM Method 1 GB Groundwater Objectives, the GB-Leachability Criteria, the I/C-DEC and UCLs. This approach is consistent with a proposed remedy that includes the establishment of an ELUR for the Site. In the event of future Site development (utility work or projects), assuming the use of the property and remedial approach does not change, the ELURs would apply, and any material handling would be performed consistent with a RIDEM-approved SMP.

The text presented below provides relative comparisons to the applicable soil and groundwater criteria. For a comprehensive summary of quantitative analytical testing results, please refer to historical Site investigation reports (summarized in **Appendix E**), as well as the 2014-2017 and 2018 through 2022 groundwater monitoring reports submitted to RIDEM.

5.1 FIELD SCREENING AND OBSERVATIONS OF IMPACTED SOILS

Explorations performed at the Site indicate the presence of up to approximately 20 feet of urban fill underlain by organic silt (non-continuous across the Site), outwash deposits and glacial till. The fill consists of sands and gravels with concrete, coal, asphalt, brick fragments, cinders, and cinder ash. Visual and olfactory indicators of impacts (i.e., petroleum-like and/or coal tar-like) were noted in the majority of the explorations generally increasing to the water table and decreasing with depth below the water table. Generally, TVOC readings were most significant coincident with the water table and decreased with depth. Visual and olfactory indicators of impacts were generally noted in areas of historical operations and historical (19th century) filling at the Site. Visual and olfactory indicators of impacts were generally detected closer to the water table (4 to 13 feet bgs); however, some areas of deeper impacts were noted in the central portion of the Site proximate to historical operations.

5.2 SURFACE SOILS (THAT ARE NOT ADDRESSED BY AN EFFECTIVE ENGINEERED CONTROL)

In general, results of the analytical testing for surface soils (i.e. upper 2 feet of the soil column) within the non-capped portions of the Site indicate widespread exceedances of the I/C-DEC for arsenic, lead and/or PAHs (primarily Benzo [a] Pyrene, Benzo [b] Fluoranthene and Benzo [a] Anthracene).²⁵ Prior to recent remedial actions completed under STRAPs for the Site, visual evidence of fill was noted for the vast majority of surface soils on the Site. In general, these compounds and concentrations detected are indicative of urban fill, which is very common for industrial properties in urban areas.

The primary exposure pathways of concern are direct contact with impacted soils. The majority of the Site is surrounded with a locked perimeter fence. Recent remedial actions further limit direct contact with Site soils due to the installed engineered caps.

²⁵ As noted above, approximately 30.3 acres of the Site have been improved with an engineered cap and the entirety of the LNG facility are considered to be controlled with engineered controls (crushed stone at surface and fencing). Therefore, this section intends to only present surface soil impacts that are noted to be located in areas that are not currently controlled with engineered controls.



5.3 SUBSURFACE SOILS

Subsurface soils (those located greater than 2 feet bgs) are characterized by similar impacts as surface soils (i.e., arsenic, lead and PAHs above RIDEM Method 1 criteria), but generally at higher concentrations and at a higher frequency of detections. In addition, exceedances of TPH and VOCs (GB Leachability) were also detected in subsurface soils in higher frequency than in surface soils. Inorganics (arsenic, lead, cyanide, and other inorganics) were not detected as frequently in subsurface samples when compared to surface soil detections. Similar to surface soil results, PAHs and arsenic were prevalent throughout the Site and VOCs, while TPH and lead exceedances, however, tend to be more localized. Several samples were submitted for TPH fingerprinting throughout the Site at varying depths. Results indicated a combination of fuel oils and tar impacted hydrocarbons in isolated pockets of the Site, with more fuel oil -like impacts detected at and above the water table, while more coal tar -like impacts detected below the water table.

Results of the analytical testing for the subsurface soils located at the Site indicate the presence of PAHs, TPH, and VOCs above the I/C-DEC and GB Leachability Criteria (TPH and VOCs only). The inorganic impacts exceeding the I/C-DEC were limited to arsenic and lead. UCL exceedances were limited to TPH and naphthalene only.

As expected, the extent of exceedances of applicable RIDEM criteria and TPH fingerprinting results in subsurface soils is generally concentrated in areas where historical MGP features and operations were located and also coincident with the depths of staining and other observations of impacts. The majority of exceedances occurred less than ten (10) feet bgs above the water table, with less impacts observed below the water table.

Many of the previously completed remedial actions that have been conducted for the Site (as described above in **Appendix AA** and **Appendix F**) focused on source removal in areas of historical MGP features. As such, the majority of remaining limited UCL exceedances remain in areas of the Site where excavation and source removal would be very difficult (depth, critically important infrastructure, utility corridors and security Site features).

The primary exposure pathway of concern for subsurface soils is direct contact to impacted soils during potential future construction/utility work.

5.4 NAPL OBSERVATIONS

LNAPL has been detected at thicknesses of between trace amounts to up to 3.58 feet at the Site in seventeen (17) monitoring wells (out of a total of seventy-five (75) monitoring wells) between 2011 and 2022 (RCA-21, RCA-29, RCA-40, VHB-3, VHB-10, VHB-21, VHB-22, VHB-23, GZ-307S, CHES RW-2, CHES RW-3, CHES RW-4, CHES RW-5, ESS RW-1, ESS RW-2, RW-1 and GZ-501S). LNAPL has been detected primarily in areas of historical MGP features and operations (RCA-21, RCA-29, RCA-40, VHB-10, VHB-21, VHB-22, VHB-23, CHES RW-2, CHES RW-3, CHES RW-4, CHES RW-5, ESS RW-1, ESS RW-2 and RW-1), however, some limited LNAPL thicknesses has been detected along the northern property line (VHB-3 and GZ-307S). The greatest thickness of LNAPL were detected in RCA-21 (0.91 to 3.58 feet). RCA-21 was replaced with RW-1 in 2014 and the thickness has decreased between 2014 and 2016 to between trace and 0.02 feet. The vast majority of detections of LNAPL detections at the Site have been between trace and 0.10 feet in thickness.

DNAPL has only been observed in trace amounts at the Site in RCA-3, along the northern property line, cross-gradient of Former MGP operations.

LNAPL detections are located in various areas of the Site (i.e., proximate to the cove near historical MGP operations, proximate to an active drain line along the northern property line and proximate the current day LNG containment dike near historical MGP operations) are likely the result of multiple source areas and are not observed in monitoring wells consistently across the Site areas. In the event a contiguous layer of LNAPL existed, the distribution pattern would tend to be more consistent and defined. The LNAPL distribution pattern observed at this Site suggests individual, localized “pockets” of LNAPL with limited potential for migration. While some evidence of sheen outbreaks ranging from spots to bands have been observed in the cove



portion of the Providence River adjacent to the areas of the Site where upland LNAPL impacts have been noted, significant remedial work was completed in these upland areas which included removal of MGP materials from former structures, cleaning of the structures, backfilling with clean soil and restoration of the area with an effective engineered caps and engineered controls. Based on the lack of significant thicknesses of LNAPL along the cove area and previous remedial work completed in this area, it is likely these sheen observations are the result of limited residual impacts.

Although NAPL observations are considered to be a UCL exceedance per Section 1.9.3 of the Remediation Regulations and given the limited current observation of NAPL across the Site and the isolated nature of such observations, no specific remedy to address NAPL is warranted. This condition will be addressed via natural attenuation and regular monitoring. Observation of the shoreline and maintaining the boom system in the cove will be continued along with monitoring well gauging for NAPL as part of the Site's routine monitoring.

5.5 GROUNDWATER RESULTS

The most significant groundwater impacts (in terms of dissolved phase constituents) were observed in areas at the Site generally coincident with areas proximate to Former MGP operations, observed NAPLs and subsurface soil impacts (RCA-1, RCA-12R, RCA-22, RCA-28, RCA-36, VHB-7, VHB-10, VHB-21, GZ-314S/D and GZ-315D). In these locations, benzene, ethylbenzene, toluene, and naphthalene were consistently present at concentrations above the GB Groundwater Objective. No exceedances²⁶ have been observed in large areas of the Site, including the northern and eastern portions of the Site along the Providence River and the southeastern portion of the Site proximate to the area occupied by Holcim.

While these dissolved phase constituents are likely migrating with the groundwater toward the Providence River (an impaired waterway), the Site is not located within 1 mile of a wellhead protection area. The Site is located at least 1.8 miles from an area with a GA groundwater use designation. Given the observed groundwater flow and regional groundwater flow direction (towards the Providence River), as well as the locations of the nearest public drinking water supplies and wellhead protection area, groundwater impacts from the Site are not expected to affect local drinking water resource areas. In addition, groundwater at the Site is not expected to be classified as a potential future source of drinking water. As such, exposure to impacted groundwater via on-Site drinking water supplies is not expected to be a concern at the Site.

6.0 **CONCEPTUAL SITE MODEL**

This section provides a description of the Conceptual Site Model (CSM) that guided GZA's remedial evaluation of the Site. This description of the CSM outlines:

- potential sources of impact; and
- potential exposure pathways.

The CSM, which evolved as the work was completed, was used to select the number, type, and location of environmental samples and to establish a framework for evaluating the adequacy of Site investigations performed to date.

6.1 POTENTIAL SOURCES OF IMPACTS

Between approximately 1910 and 1954, a MGP was in operation at the Site. The MGP operations were discontinued in approximately 1954 and, as is typical of the documentation from this era, it is unclear to what extent below grade components of the MGP were demolished/removed. Coal tar was a primary residual of the coal gas, carbureted water gas and producer

²⁶ Although it was detected in excess of RIDEM GB Groundwater Objectives in several monitoring wells, vinyl chloride is not expected to be a constituent of concern associated with the Site. The detection of Vinyl Chloride at the Site is expected to be from off-Site impacts.



gas processes, which were reportedly performed at this plant. Coal tar can be either lighter or denser than water (typically denser), relatively immobile and persistent under geologic and hydrogeologic conditions. It is generally composed of a complex mixture of PAHs that exhibit low volatility, low solubility, low biodegradability, and high adsorption tendency.

Lighter oils, raw condensate and purifying waters represent other typical MGP residual streams. The oils typically contain monocyclic and duo cyclic aromatic hydrocarbons including benzene, toluene, ethylbenzene, and xylenes. These aromatic hydrocarbons generally exhibit moderate solubility and biodegradability and are generally volatile and have low adsorption tendencies. The purifying process often generated filtration mediums, containing the filtered gas impurities such as cyanide, metals, sulfur, ammonias, phenols, and tars. Some plants sold oil, tar, and/or ammonia by-products for other uses depending upon local market demands and the ability of the plants to effectively separate materials.

Subsequent to the MGP operations, from approximately the 1950s to present day the use of the Site has been a bulk product storage facility (LNG, propane, and cement), LPG and propane gas production, natural gas regulation facility and fuel storage and distribution. These operations were located within the footprint of the Former MGP operations and within areas formerly filled. Surficial and below grade releases of petroleum products are viewed as potential sources of contamination at the Site.

Given the widespread placement of urban fill at the Site during the late-1800s and early-1900s, the persistence of MGP residuals in the environment, and the extensive location and duration of operations at the Site, the detected constituents located above and at the groundwater table appear to predominantly be a result of comingling of impacts from both the MGP operations and upgradient fuel storage and use. These commingled impacts are generally highest proximate to the groundwater table and decrease with depth.

6.2 POTENTIAL EXPOSURE PATHWAYS

The primary potential exposure pathways identified for the Site, based on current and foreseeable future use, are as follows:

- Direct contact with near surface impacted soils that remain uncapped or not addressed by effective engineered controls;
- Direct contact with subsurface soils by future construction/utility workers; and
- Presence of limited areas of NAPL.

The following sections further describe the potential exposure pathways identified above. As described in Section 7.00, the primary goal of the selected remedial alternative is to adequately address these exposure pathways.

6.2.1 Direct Contact with Surface Soils

Widespread inorganic and PAH surface soil impacts were detected across the Site in uncapped surface soils at concentrations exceeding the I/C-DEC.

For surface soil, the primary potential exposure pathways of concern at the Site are direct contact.

As noted previously, approximately 74% (30.3 acres of a total 41 acres) of the Site of the Site has been remediated via a combination of impacted soil removal and installation of RIDEM approved engineered caps.

Additionally, while there are portions of the existing LNG facility that are not currently capped with a RIDEM-approved engineered cap, the entirety of the LNG facility (16.36 acres) is surrounded by a double layer of chain link fencing with razor wire which is inspected on a daily basis. Access to this portion of the Site is limited to trained, on-Site personnel. Ground cover within this portion of the LNG facility consists of a layer of crushed stone; no surface soils are exposed. The combined security fencing and crushed stone associated with the LNG facility are considered to constitute an effective alternative engineered control.



In addition, the majority of the remainder of the Site is fenced and restricted to prevent unauthorized access. Therefore, under current Site conditions, the concern related to direct exposure is generally mitigated by the presence of a security fence which restricts access to RI Energy personnel and authorized visitors.

6.2.2 Direct Contact with Subsurface Soils

Figure 8 was prepared to present the current status of engineered caps and controls at the Site. Similar to surface soil, widespread subsurface soil impacts were detected throughout the Site at concentrations exceeding the Method 1 I/C-DEC and exceeding the GB Leachability Criteria. In addition, the most elevated subsurface impacts were observed proximate to the Former MGP operations (central portion of the Site – proximate to the Former Compressor House No. 1 and the central portion of the present-day LNG Facility).

For subsurface soils, the primary exposure pathway of concern is direct contact to impacted soils during potential future construction/utility work. While under existing Site conditions direct exposure to these impacts is not a concern given their depth (greater than 2 feet below grade), a potential exists for exposure to these impacted materials during on-Site construction and future Site redevelopment.

6.2.3 Presence of Limited Areas of LNAPL

Measurable LNAPL is currently (between 2015 and 2022) observed in certain limited areas of the Site at thicknesses ranging from trace amounts to 0.33 feet, with no LNAPL detected in the vast majority of wells. These LNAPL are likely the result of multiple source areas and are not observed in monitoring wells consistently across the Site areas. In the event a contiguous layer of LNAPL existed, the distribution pattern would tend to be more consistent and defined. The LNAPL distribution pattern suggests individual, localized “pockets” of LNAPL. Given the limited nature of these LNAPL observations, they will continue to be addressed via natural attenuation and monitoring.

7.0 REMEDIAL OBJECTIVES

As discussed above, previous remedial actions and Site development work, including those performed more recently by TNEC (i.e., *Holder 18/21 Capping Project STRAP*) and NG LNG, LLC (i.e., *Liquefaction STRAP*), have effectively addressed potential human health risks by mitigating potential exposure pathways associated with direct contact in approximately 29.44 of 41 acres of the total Site. Figure 8 presents the limits and types of RIDEM-approved engineered caps and controls currently in place. Based on the information presented in this figure, it is estimated that approximately 11.58 acres (28%) of the Site remains to be capped as part of future remedial work at the property.

In addition, certain of these remedial measures (i.e., Former MGP structure remediation and source removal) substantially addressed potential impacts to environmentally sensitive areas and natural resources by mitigating potential migration of MGP residuals to the cove area and Providence River.

Consistent with the Remediation Regulations, the overall remedial objective is to provide protection of human health and the environment relative to the identified constituents of concern in soil and groundwater. In the preparation of the overall Site remediation evaluation, it is assumed that the placement of the existing engineered controls at the Site have effectively addressed identified human health risks by mitigating potential exposure pathways associated with direct contact. An ELUR preventing potable use of groundwater and residential use of the Site, as well as maintaining the integrity of the existing engineered controls and providing restrictions related to the disturbance of impacted materials below the existing engineered caps (in the form of the SMP), will be an integral part of the remedial approach.



The following specific remedial objectives were identified for this Site based on the nature and extent of the observed impacts and our CSM (presented above in Section 6.0):

- Prevention of direct contact to surface soils exhibiting concentrations above the Method 1 I/C-DEC that are not currently controlled with engineered caps and controls (approximately 11.58 acres); and
- Prevention of direct contact with impacted subsurface soils with concentrations above the Method 1 I/C-DEC by future construction/utility workers.
- Continued natural attenuation and monitoring of LNAPL.

Since there is no identified use or current exposure risk, these remedial objectives do not directly address dissolved phase groundwater impacts. Groundwater quality will be monitored and is expected to continue to improve via natural attenuation.

The remedial alternatives identified below in Section 8.0 were evaluated based on several criteria, including their ability to achieve these objectives. As indicated, in performing the remedial alternative evaluation, we assumed that an ELUR preventing use of groundwater and restricting use of the Site to commercial or industrial use will be an integral part of the selected remedy. This ELUR will also be implemented to maintain existing engineered controls and restrictions related to the disturbance of impacted materials. In addition, the ELUR would include the existing SMP to address handling of impacted soil and groundwater which may be encountered during future construction projects or other Site activities.

Section 8.0 presents an evaluation of identified remedial alternatives for the Site and Section 7.0 presents the selected remedial alternative along with the rationale for its selection. Section 11.0 describes a preliminary implementation schedule.

8.0 REMEDIAL ACTION ALTERNATIVES

Three Remedial Action Alternatives (RAAs) for the Site have been identified:

- RAA#1: No Action with Monitored Natural Attenuation (MNA) and ELUR;
- RAA#2: Progressive Engineered Capping, ELUR, Monitored Natural Attenuation, Groundwater Monitoring, Fencing Maintenance and Boom Maintenance; and
- RAA#3: Significant Source Removal, Engineered Capping, ELUR, Monitored Natural Attenuation, Fencing Maintenance and Groundwater Monitoring.

Each of these alternatives is described below.

8.1 REMEDIAL ACTION ALTERNATIVE #1: NO ACTION WITH MONITORED NATURAL ATTENUATION (MNA) AND ELUR

Under this alternative, no further actions would be taken to address identified soil impacts and natural attenuation mechanisms would be relied upon to address groundwater/NAPL impacts. Natural attenuation monitoring would be performed initially semi-annually and over the longer term on an annual basis and would consist of gauging the Site monitoring well network for the presence of NAPL, performing NAPL recovery and collecting and analyzing groundwater samples from select monitoring wells. An ELUR would be implemented for continued restricted industrial use of the Site and restrictions on groundwater use at the Site (not for potable use), as well as maintenance of the existing engineered caps. The ELUR would include the SMP to address handling of impacted soils and groundwater during future construction projects. The SMP includes procedures for soil screening/disposal requirements, soil stockpile management and erosion controls, odor controls, dust controls, capping requirements, decontamination protocols for equipment leaving the Site, requirements for import of soils, basic dewatering



guidelines and management of non-soils (such as asphalt or concrete). This alternative would not include implementation of any additional engineered controls to address the uncontrolled portions of the Site. Routine annual inspections, maintenance and repair of the controls (existing) as necessary are also included as part of this RAA#1 to ensure compliance.

This alternative could be implemented immediately, is considered to be the least permanent and is anticipated to be the lowest cost approach.

8.2 REMEDIAL ACTION ALTERNATIVE #2: PROGRESSIVE ENGINEERED CAPPING, ELUR, MNA, GROUNDWATER MONITORING, FENCING MAINTENANCE AND BOOM MAINTENANCE

Remedial Action Alternative #2 (RAA#2) involves the progressive construction of new and maintenance of existing engineered controls across the Site designed to mitigate direct exposure risks to impacted surficial Site soils. These caps and controls would be installed on a progressive basis as redevelopment of the Site is planned and construction projects are implemented. Consistent with RIDEM requirements, the caps would likely consist of at least 2-feet of clean imported fill, 1-foot of clean imported fill underlain with geotextile, asphalt underlain by at least 6-inches of clean imported fill or at least four-inches of concrete. Engineered controls such as fencing, stockpile covering, water application for dust control and others would be instituted during construction to mitigate potential dust, vapor and odor migration during remedial implementation (capping and controls installation). Routine annual inspections, maintenance and repair of the caps (existing and progressively installed) and fencing as necessary are also included as part of this RAA#2 to ensure compliance. The boom within the cove area would also be regularly inspected on a monthly basis and maintained as needed as part of this RAA#2.

Similar to RAA #1, this alternative relies on natural attenuation mechanisms to address remaining dissolved phase groundwater impacts and NAPL. Natural attenuation groundwater monitoring, as described under RAA#1 would be performed initially semi-annually and over the longer term annually to track and evaluate the reduction in constituents of concern mass.

Similar to RAA#1, an ELUR would be implemented for continued restricted industrial use of the Site and restrictions on groundwater use at the Site (not for potable use). In addition, the ELUR would include maintenance of the existing engineered caps and requirements to be followed related to the disturbance of impacted materials beneath the existing and future engineered caps. The ELUR would also include the SMP, which would include handling of impacted soils and groundwater during potential future construction projects. The SMP includes procedures for soil screening/disposal requirements, soil stockpile management and erosion controls, odor controls, dust controls, capping requirements, decontamination protocols equipment leaving the Site, requirements for import of soils, basic dewatering guidelines and management of non-soils (such as asphalt or concrete). The ELUR would also include provisions for notification to RIDEM of future construction projects at the Site.

As previously noted, approximately 74% (30.3 acres of a total 41 acres) of the Site of the Site has been remediated via a combination of impacted soil removal and installation of RIDEM approved engineered caps. Additionally, while there are portions of the existing LNG facility that are not currently capped with a RIDEM-approved engineered cap, the entirety of the LNG facility (16.36 acres) is surrounded by a double layer of chain link fencing with razor wire which is inspected on a daily basis and the majority of the remainder of the Site is currently fenced to restrict access.

This RAA#2 assumes that an engineered caps and controls would be progressively implemented across the remaining portion of the Site, as facility construction projects are completed. The area which will be subject to future progressive capping is shown on Figure 8 (*Recommended Remedial Alternative*).

Under this RAA#2, the perimeter Site fencing would also be maintained to limit trespassing and direct access to the Site.

Under this RAA#2, the existing boom in the cove would also be inspected and maintained.

This alternative is considered highly effective and reliable at mitigating short- and long-term exposure risks related to direct exposure to impacted surface soils when compared to RAA#1. This alternative is considered to be more permanent than



RAA#1, while being marginally less permanent than RAA#3. This alternative utilizes standard construction techniques so this alternative would also be considered readily implementable to address the direct exposures issues. Implementation of this alternative would effectively address potential construction worker risks associated with impacted subsurface soils via adherence to the SMP procedures as described above. This alternative would also include continued inspection and maintenance of the boom, NAPL gauging and routine groundwater monitoring and cap inspections.

Costs associated with this RAA#2 would be higher than RAA#1, but less than RAA#3.

8.3 REMEDIAL ACTION ALTERNATIVE #3: SIGNIFICANT SOURCE REMOVAL, ENGINEERED CAPPING, ELUR, MNA, FENCING MAINTENANCE AND GROUNDWATER MONITORING

RAA#3 includes extensive excavation of observed source area impacts associated with historical operations across the Site (estimated at approximately 65,000 CY (assume soil excavation over approximately 5 acres to a depth of approximately 8 feet) of impacted soil removed and disposed off-Site). Removal efforts would involve excavation of impacted areas to the depth of observed significant visual impacts (*i.e.*, visual indicators of “coated, blebs, saturated and/or free product”). In addition, source removal efforts would necessitate removal and excavation under the containment dike which serves as secondary containment to the existing LNG tank. Implementation will also likely require NAPL and groundwater management, including groundwater treatment and discharge. Based on Site experience, dewatering efforts would likely be significant given the proximity to the river and groundwater recharge rates encountered during previous construction projects at the Site (on the order of 100,000 gallons per day). The disturbance of the containment dike would require significant outages of critical infrastructure systems during construction.

Significant dust, vapor and odor control and monitoring would be required during remedial implementation.

Under this RAA#3, the perimeter Site fencing would also be maintained to limit trespassing and direct access to the Site.

Similar to RAAs #1 and #2, this alternative relies on natural attenuations mechanisms to address remaining dissolved phase groundwater impacts and NAPLs. Natural attenuation groundwater monitoring, as described under RAA#1 and RAA #2 would be performed initially semi-annually and over the longer term annually to track and evaluate the reduction in constituents of concern mass.

Similar to RAAs #1 and #2, an ELUR would be implemented for continued restricted industrial use of the Site and restrictions on groundwater use at the Site (not for potable use). In addition, the ELUR would include maintenance of the engineered caps and restrictions related to the disturbance of impacted materials beneath the engineered control caps. The ELUR would include the SMP (as described above in RAA#2) to address handling of impacted soils and groundwater during potential future construction projects.

This alternative is considered highly effective, permanent, and reliable at mitigating long term exposure risks related to direct exposure to Site constituents when compared to RAA#1, and marginally more effective, permanent and reliable than RAA#2. Effectiveness, permanency, and reliability of excavation as a remedial alternative, however, generally relies on ease of excavation, depth of the water table and logistical considerations associated with the accessibility of source material, complexity of subsurface debris and presence of significant subsurface utility networks. Given the nature of the historical fill at the Site, the history of industrial use at the Site, and limitations associated with the facility (existing facility, critically important infrastructure, utility corridors and security Site features), excavation would be difficult and cost prohibitive. As previously discussed, areas of TPH impacts beneath the containment dike would not be accessible under this RAA. The shallow water table would also require dewatering, treatment and discharge. Due to the handling of large volumes of contaminated soil over extensive areas, RAA#3 is expected to have significantly higher short-term implementation risks associated with potential odor, vapor and dust migration both on and off-Site. In addition, due to the quantity of contaminated soil, this alternative would require extensive management, on-Site stockpiling and subsequent loading and off-Site transportation, thus posing potential higher short-term risks (greatly increase in truck traffic in the area). Given the implementation limitations, excavation would likely not be able to



reduce soil concentrations to below RIDEM GB Leachability and I/C-DEC, would carry high costs for implementation (i.e., earth support systems, dewatering, transportation and disposal costs) and would likely still require engineering capping to control exposure risks. It is GZA's opinion, therefore, that RAA#3 provides only marginal environmental benefit compared to RAA#2, but with significantly more implementation risk and higher costs.

9.0 RECOMMENDED REMEDIAL ACTION ALTERNATIVE

Based on Site conditions and a review of the above outlined Remedial Alternatives, it is GZA's opinion that RAA #2 *Progressive Engineered Capping, ELUR, MNA, Groundwater Monitoring, Fencing Maintenance and Boom Maintenance*, is the appropriate approach for remediating the Site. This recommendation is based on consideration of the following:

- Current Site use is industrial/commercial and will remain such;
- Groundwater at the Site is classified GB, and is not used for human consumption, irrigation or processing; and
- Soil, groundwater and NAPL impacts at the Site are widespread and do not appear to be mobile;
- Reducing the risk of interruptions to critical utility infrastructure services; and
- To date, approximately 72% of the Site is currently complete with engineered caps to control direct exposure.

RAA #3 is expected to add little to no added benefit to the Site remedy and is considered to have high implementation costs and logistical complications pertaining to maintaining service of critical utility infrastructure. As previously mentioned, the nature of the fill at the Site indicates heterogenous material with many underground obstructions and unknown utilities/conditions, which would complicate the process of excavation. The effectiveness and reliability of RAA #3 is limited by the presence of heterogeneous fill (indicated by building remnants and obstructions), accessibility of the source material beneath existing facility features (i.e., UCLs beneath containment dike) and the complexity of the utility network at the Site. Furthermore, implementation of RAA #3 would potentially result in mobilization of impacts towards the Providence River, potentially increase dust and vapor production during excavation activities, and cause significant disruption of critical utility infrastructure services.

RAA#2 is effective in providing a remedy for the Site, especially as compared to RAA#3. RAA #2 is readily implementable, financially feasible, and brings the Site into compliance with the RIDEM Remediation Regulations. Since the completion of several major projects at the Site, approximately 72% of the Site has been remediated through progressive implementation of engineered caps, and approximately 82% of the Site is controlled via engineered caps and the LNG security fence as an alternative barrier. Furthermore, given the above implementation concerns and limitations associated with RAA#3, this alternative provides little to no added benefit compared to RAA#2, which has already addressed the majority of direct exposure risks to date at the Site. Therefore, it is GZA's opinion that continued progressive engineered capping (RAA#2) is the most appropriate remedial action for the Site.

10.0 PROPOSED GROUNDWATER MONITORING

The proposed groundwater monitoring program will consist of a semi-annual full gauging round and NAPL recovery (if detected) of the remaining monitoring wells and annual groundwater sampling of select monitoring wells. Twenty seven (27) monitoring wells are proposed to be sampled on an annual basis to provide adequate aerial coverage based on a review of historical data: RCA-1, RCA-12R, RCA-15, RCA-22, RCA-31, RCA-36, VHB-1, VHB-20, GZ-201, GZ-202, GZ-301D, GZ-304D, GZ-309D, GZ-319D, GZ-



500S, GZ 500D, GZ-501S, GZ-502S, GZ-311DR, GZ-313DR, GZ-315DR, GZ-318DR, RCA-3R, RCA-5R, VHB-3R, VHB-21R, and VHB-22R . Figure Y-1 (*Groundwater Monitoring Plan*) in **Appendix Y** presents the proposed groundwater monitoring program.

Prior to sampling, the following parameters will be assessed at each well: depth to groundwater, depth to well bottom, and depth to NAPL, if present. Groundwater samples will be collected from the wells containing NAPL. In order to limit the potential for LNAPL to enter the sampling tubing during the collection of the sample, a peristaltic pump will be used to force air through the tubing as it passed through the LNAPL/groundwater interface. In addition, if DNAPL were noted in the well, the sampling tubing was installed in these wells carefully so that the DNAPL layer was not intercepted or disturbed.

Groundwater sampling will be performed in accordance with the US EPA’s September 19, 2017 Low Stress (low flow) Purging and Sampling Procedure. As part of this sampling methodology, well stabilization will be determined through the measurement of specific water quality parameters (pH, temperature, specific conductance, dissolved oxygen, oxidation reduction potential, and turbidity) during the purging process. Purging will continue until these parameters have stabilized. Groundwater samples will be submitted for analysis of VOCs. In addition, GZA will collect and submit one set of QA/QC samples consisting of one duplicate to assess sample reproducibility and a VOC trip blank.

Should NAPL be present in the monitoring wells, it will be removed, and the recovery rate documented. Purge water generated during groundwater sampling will be field-screened for total VOCs with a PID and then placed in 55-gallon drums for subsequent characterization and off-Site disposal at a RI Energy approved facility. Any recovered NAPL will be segregated from the purge water to the extent practical, placed in a 55-gallon drum for subsequent characterization and off-Site disposal at a RI Energy approved facility.

11.0 ANTICIPATED SCHEDULE

With respect to anticipated schedule and sequence, RI Energy is prepared to proceed as outlined below in a timely manner upon receipt of a *Program Letter* from RIDEM confirming that RI Energy has adequately assessed the nature and extent of contamination at the Site. In developing this anticipated schedule, we have assumed receipt of this *Program Letter* by the end of January 2024.

- Public Notice: Winter 2024
- RIDEM Issuance of *Remedial Decision Letter*: Winter 2024
- Preparation and Submittal of *RAWP*: Spring – Summer 2024
- RIDEM Issuance of *Remedial Approval Letter*: Fall 2024
- Implementation of Remedial Construction: 2024 – Ongoing
- Preparation of *Remedial Action Closure Report*: Upon completion of Remedial Actions



12.0 CERTIFICATION

To address Section 1.8.5 of the Remediation Regulations, the following statements of certification are provided.

GZA GeoEnvironmental, Inc. certifies to the best of its knowledge, that this Site Investigation Report (SIR) Addendum, is complete and accurate.

A handwritten signature in blue ink, appearing to read 'MSK', is written over a horizontal line.

Margaret S. Kilpatrick, PE
Principal
GZA GeoEnvironmental, Inc.

RI Energy certifies, to the best of its knowledge, that this Site Investigation Report (SIR) Addendum, is a complete and accurate representation of the contaminated Site and the release(s) and contains all known facts surrounding the release.

Amy Willoughby
Lead Environmental Scientist
The Narragansett Electric Company d/b/a RI Energy



TABLES

TABLE 1
SUMMARY OF SOIL VOC ANALYTICAL RESULTS

642 Allens Avenue
Providence, Rhode Island

| | Units | RIDEM GB Leachability Criteria | RIDEM Industrial/Commercial DEC | RIDEM UCL | GZ-301D S-3 1405585-03 05/22/2014 | GZ-302D S-3 1405585-02 05/22/2014 | GZ-303D S-3 1405585-01 05/22/2014 | GZ-304D S-2 1405579-03 5/21/2014 | GZ-305S S-1B 1405579-02 5/21/2014 | GZ-306S S-2 1405579-01 5/21/2014 | GZ-307S S-3 1405485-01 05/19/2014 | GZ-308S S-2 1405485-02 05/19/2014 | GZ-309D S-3 1405485-03 05/19/2014 | GZ-310D S-2 1406074-02 05/28/2014 | GZ-311D S-2 1405553-01 05/19/2014 | GZ-312D S-2 1405662-01 05/23/2014 | GZ-313D S-3 1405553-02 05/19/2014 | GZ-314D S-3 1405669-02 05/27/2014 | GZ-315D S-3 1406074-01 05/28/2014 | GZ-317D S-2 1405662-03 05/23/2014 | GZ-318D S-3 1405662-02 05/23/2014 | GZ-319D S-3 1405669-01 05/27/2014 | GZ-320D S-3 1406074-03 05/28/2014 |
|--|-------|--------------------------------|---------------------------------|-----------|---|---|---|--|---|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EPA Method 8260 B Volatile Organics | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | mg/kg | NE | 220 | 10,000 | <0.118 | <0.0696 | <0.0789 | <0.121 | <0.112 | <0.153 | <0.117 | <0.116 | <0.0941 | <0.0894 | <0.0979 | <0.113 | <0.0847 | <0.0700 | <0.0837 | <0.0773 | <0.0870 | <0.0616 | <0.0837 |
| 1,1,1-Trichloroethane | mg/kg | 160 | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,1,2,2-Tetrachloroethane | mg/kg | NE | 29 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,1,2-Trichloroethane | mg/kg | NE | 100 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,1-Dichloroethane | mg/kg | NE | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,1-Dichloroethene | mg/kg | 0.7 | 9.5 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,1-Dichloropropene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,2,3-Trichlorobenzene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,2,3-Trichloropropane | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,2,4-Trichlorobenzene | mg/kg | NE | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,2,4-Trimethylbenzene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | 0.167 | 0.092 | 0.911 | 0.0505 J | <0.0579 | <0.0471 | 0.0134 J | 0.0284 J | <0.0564 | <0.0423 | 13.3 D | 0.0368 J | 0.291 | 0.0209 J | 0.0629 | <0.0418 |
| 1,2-Dibromo-3-Chloropropane | mg/kg | NE | 4.1 | 10,000 | <0.353 | <0.209 | <0.237 | <0.363 | <0.336 | <0.459 | <0.352 | <0.348 | <0.282 | <0.268 | <0.294 | <0.338 | <0.254 | <0.210 | <0.251 | <0.232 | <0.261 | <0.185 | <0.251 |
| 1,2-Dibromoethane | mg/kg | NE | 0.07 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,2-Dichlorobenzene | mg/kg | NE | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,2-Dichloroethane | mg/kg | 2.3 | 63 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,2-Dichloropropane | mg/kg | 70 | 84 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,3,5-Trimethylbenzene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | 0.0593 J | 0.0471 J | 0.99 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | 0.0176 J | <0.0564 | <0.0423 | 2.36 | 0.0352 J | 0.0989 | <0.0435 | 0.0321 | <0.0418 |
| 1,3-Dichlorobenzene | mg/kg | NE | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,3-Dichloropropane | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,4-Dichlorobenzene | mg/kg | NE | 240 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 1,4-Dioxane - Screen | mg/kg | NE | NE | 10,000 | <5.88 | <3.48 | <3.94 | <6.05 | <5.61 | <7.65 | <5.87 | <5.79 | <4.71 | <4.47 | <4.90 | <5.64 | <4.23 | <3.50 | <4.19 | <3.86 | <4.35 | <3.08 | <4.18 |
| 1-Chlorohexane | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 2,2-Dichloropropane | mg/kg | NE | NE | 10,000 | <0.118 | <0.0696 | <0.0789 | <0.121 | <0.112 | <0.153 | <0.117 | <0.116 | <0.0941 | <0.0894 | <0.0979 | <0.113 | <0.0847 | <0.0700 | <0.0837 | <0.0773 | <0.0870 | <0.0616 | <0.0837 |
| 2-Butanone | mg/kg | NE | 10,000 | 10,000 | <1.47 | <0.986 | <0.986 | <1.51 | <1.40 | <1.91 | <1.47 | <1.45 | <1.18 | <1.12 | <1.22 | <1.41 | <1.06 | <0.875 | <1.05 | <0.966 | <1.09 | <0.770 | <1.05 |
| 2-Chlorotoluene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 2-Hexanone | mg/kg | NE | NE | 10,000 | <0.588 | <0.348 | <0.394 | <0.605 | <0.561 | <0.765 | <0.587 | <0.579 | <0.471 | <0.447 | <0.490 | <0.564 | <0.423 | <0.350 | <0.419 | <0.386 | <0.435 | <0.308 | <0.418 |
| 4-Chlorotoluene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 4-Isopropyltoluene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | 0.0194 J | <0.0561 | 0.11 | 0.0399 J | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | 1.5 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| 4-Methyl-2-Pentanone | mg/kg | NE | 10,000 | 10,000 | <0.588 | <0.348 | <0.394 | <0.605 | <0.561 | <0.765 | <0.587 | <0.579 | <0.471 | <0.447 | <0.490 | <0.564 | <0.423 | <0.350 | <0.419 | <0.386 | <0.435 | <0.308 | <0.418 |
| Acetone | mg/kg | NE | 10,000 | 10,000 | <1.47 | <0.870 | <0.986 | <1.51 | <1.40 | <1.91 | <1.47 | <1.45 | <1.18 | <1.12 | <1.22 | <1.41 | <1.06 | <0.875 | <1.05 | <0.966 | <1.09 | <0.770 | <1.05 |
| Benzene | mg/kg | 4.3 | 200 | 10,000 | <0.0588 | <0.0348 | <0.0394 | 0.181 | 0.0415 J | 0.234 | 0.0117 J | <0.0579 | <0.0471 | 0.008 J | 0.049 J | <0.0564 | <0.0423 | 1.97 | 0.0477 | 0.234 | <0.0435 | 0.0536 | 0.0519 |
| Bromobenzene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |

Notes

Location is located in the Natural Gas Regulator portion of the Property

Location is located at the LNG Facility

Location is located in the Former CNG Fueling Station portion of the Property

NE = Not Established

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Gray shaded cells and bolded text indicates the concentration exceeds the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).

Blue shaded cells indicate that the detection limit exceeds the RIDEM Method 1 Criteria.

Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

TABLE 1
SUMMARY OF SOIL VOC ANALYTICAL RESULTS

642 Allens Avenue
Providence, Rhode Island

| | Units | RIDEM GB Leachability Criteria | RIDEM Industrial/Commercial DEC | RIDEM UCL | GZ-301D S-3 1405585-03 05/22/2014 | GZ-302D S-3 1405585-02 05/22/2014 | GZ-303D S-3 1405585-01 05/22/2014 | GZ-304D S-2 1405579-03 5/21/2014 | GZ-305S S-1B 1405579-02 5/21/2014 | GZ-306S S-2 1405579-01 5/21/2014 | GZ-307S S-3 1405485-01 05/19/2014 | GZ-308S S-2 1405485-02 05/19/2014 | GZ-309D S-3 1405485-03 05/19/2014 | GZ-310D S-2 1406074-02 05/28/2014 | GZ-311D S-2 1405553-01 05/19/2014 | GZ-312D S-2 1405662-01 05/23/2014 | GZ-313D S-3 1405553-02 05/19/2014 | GZ-314D S-3 1405669-02 05/27/2014 | GZ-315D S-3 1406074-01 05/28/2014 | GZ-317D S-2 1405662-03 05/23/2014 | GZ-318D S-3 1405662-02 05/23/2014 | GZ-319D S-3 1405669-01 05/27/2014 | GZ-320D S-3 1406074-03 05/28/2014 |
|--|-------|--------------------------------|---------------------------------|-----------|---|---|---|--|---|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EPA Method 8260 B Volatile Organics | | | | | | | | | | | | | | | | | | | | | | | |
| Bromochloromethane | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Bromodichloromethane | mg/kg | NE | 92 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Bromoform | mg/kg | NE | 720 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Bromomethane | mg/kg | NE | 2,900 | 10,000 | <0.118 | <0.0696 | <0.0789 | <0.121 | <0.112 | <0.153 | <0.117 | <0.116 | <0.0941 | <0.0894 | <0.0979 | <0.113 | <0.0847 | <0.0700 | <0.0837 | <0.0773 | <0.0870 | <0.0616 | <0.0837 |
| Carbon Disulfide | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Carbon Tetrachloride | mg/kg | 5 | 44 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Chlorobenzene | mg/kg | 100 | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Chloroethane | mg/kg | NE | NE | 10,000 | <0.118 | <0.0696 | <0.0789 | <0.121 | <0.112 | <0.153 | <0.117 | <0.116 | <0.0941 | <0.0894 | <0.0979 | <0.113 | <0.0847 | <0.0700 | <0.0837 | <0.0773 | <0.0870 | <0.0616 | <0.0837 |
| Chloroform | mg/kg | NE | 940 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Chloromethane | mg/kg | NE | NE | 10,000 | <0.118 | <0.0696 | <0.0789 | <0.121 | <0.112 | <0.153 | <0.117 | <0.116 | <0.0941 | <0.0894 | <0.0979 | <0.113 | <0.0847 | <0.0700 | <0.0837 | <0.0773 | <0.0870 | <0.0616 | <0.0837 |
| cis-1,2-Dichloroethene | mg/kg | 60 | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| cis-1,3-Dichloropropene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Dibromochloromethane | mg/kg | NE | 68 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Dibromomethane | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Dichlorodifluoromethane | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Diethyl Ether | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Di-isopropyl ether | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Ethyl tertiary-butyl ether | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Ethylbenzene | mg/kg | 62 | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | 0.394 | 0.0606 | 0.315 | <0.0587 | <0.0579 | <0.0471 | 0.0519 | 0.0255 J | <0.0564 | <0.0423 | 5.98 | 0.01 J | 0.0587 | <0.0435 | 0.0561 | <0.0418 |
| Hexachlorobutadiene | mg/kg | NE | 73 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Isopropylbenzene | mg/kg | NE | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | 0.0339 J | <0.0561 | 0.11 | 1.26 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | 0.883 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Methyl tert-Butyl Ether | mg/kg | 100 | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Methylene Chloride | mg/kg | NE | 760 | 10,000 | <0.294 | <0.174 | <0.197 | <0.302 | <0.280 | <0.383 | <0.294 | <0.290 | <0.235 | <0.224 | <0.245 | <0.282 | <0.212 | <0.175 | <0.209 | <0.193 | <0.217 | <0.154 | <0.209 |
| Naphthalene | mg/kg | NE | 10,000 | 10,000 | 0.0259 J | <0.0348 | <0.0394 | 0.72 | 0.196 | 5.61 | 0.589 | 0.0243 J | <0.0471 | 0.218 | 0.27 | <0.0564 | 0.0618 | 120 D | 0.868 | 10.1 D | 0.0739 | 0.428 | 0.0268 J |
| n-Butylbenzene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | 0.028 J | <0.0765 | 1.16 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | 0.0373 J | 2.61 | <0.0419 | 0.0193 J | <0.0435 | 0.0154 J | <0.0418 |
| n-Propylbenzene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | 0.0871 | 0.0258 J | 0.165 | 1.5 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | 0.518 | <0.0419 | <0.0386 | <0.0435 | 0.0142 J | <0.0418 |
| sec-Butylbenzene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | 0.029 J | <0.0561 | 0.132 | 1.85 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | 0.011 | 0.469 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Styrene | mg/kg | 64 | 1,900 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | 0.0123 J | <0.0765 | <0.0587 | <0.0579 | <0.0471 | 0.0089 J | <0.0490 | <0.0564 | <0.0423 | <0.0350 | 0.041 J | <0.0386 | 0.0096 J | 0.0419 | <0.0418 |
| tert-Butylbenzene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | 0.16 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | 0.0574 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Tertiary-amyl methyl ether | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Tetrachloroethene | mg/kg | 4.2 | 110 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Tetrahydrofuran | mg/kg | NE | NE | 10,000 | <0.588 | <0.348 | <0.394 | <0.605 | <0.561 | <0.765 | <0.587 | <0.579 | <0.471 | <0.447 | <0.490 | <0.564 | <0.423 | <0.350 | <0.419 | <0.386 | <0.435 | <0.308 | <0.418 |
| Toluene | mg/kg | 54 | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | 0.264 | 0.156 | 0.474 | 0.0716 | <0.0579 | <0.0471 | <0.0447 | 0.0401 J | <0.0564 | <0.0423 | 0.43 | 0.134 | 0.188 | <0.0435 | 0.0801 | 0.0142 J |
| trans-1,2-Dichloroethene | mg/kg | 92 | 10,000 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| trans-1,3-Dichloropropene | mg/kg | NE | NE | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | <0.0308 | <0.0418 |
| Trichloroethene | mg/kg | 20 | 520 | 10,000 | <0.0588 | <0.0348 | <0.0394 | <0.0605 | <0.0561 | <0.0765 | <0.0587 | <0.0579 | <0.0471 | <0.0447 | <0.0490 | <0.0564 | <0.0423 | <0.0350 | <0.0419 | <0.0386 | <0.0435 | & | |

**TABLE 2
SUMMARY OF SOIL TPH, PAHS AND INORGANICS ANALYTICAL RESULTS**

642 Allens Avenue
Providence, Rhode Island

| | Units | RIDEM GB Leachability Criteria | RIDEM Industrial/Commercial DEC | RIDEM UCL | GZ-301D S-3 1405585-03 05/22/2014 | GZ-302D S-3 1405585-02 05/22/2014 | GZ-303D S-3 1405585-01 05/22/2014 | GZ-304D S-2 1405579-03 5/21/2014 | GZ-305S S-1B 1405579-02 5/21/2014 | GZ-306S S-2 1405579-01 5/21/2014 | GZ-307S S-3 1405485-01 05/19/2014 | GZ-308S S-2 1405485-02 05/19/2014 | GZ-309D S-3 1405485-03 05/19/2014 | GZ-310D S-2 1406074-02 05/28/2014 | GZ-311D S-2 1405553-01 05/19/2014 | GZ-312D S-2 1405662-01 05/23/2014 | GZ-313D S-3 1405553-02 05/19/2014 | |
|---|-------|--------------------------------|---------------------------------|-----------|---|---|---|--|---|--|---|---|---|---|---|---|---|--|
| EPA Method 8100 M TOTAL PETROLEUM HYDROCARBON | | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | mg/kg | 2,500 | 2,500 | 30,000 | 971 | <40.8 | <41.6 | <u>3790</u> | 666 | <u>4250</u> | <u>7460</u> | 48.6 | <42.3 | 553 | 573 | 83.9 | 590 | |
| EPA Method 6010 B / 7471 A INORGANIC COMPOUNDS | | | | | | | | | | | | | | | | | | |
| Total Cyanide | mg/kg | NE | 10,000 | 10,000 | 1.62 | <1.02 | <1.08 | 2.67 | 5.55 | 4.89 | <1.13 | <1.17 | <1.12 | 52.6 D | <1.04 | <1.10 | <1.08 | |
| Antimony | mg/kg | NE | 820 | 10,000 | <4.8 | 7.5 | <4.7 | 80.4 | <4.7 | 9.1 | <4.7 | <5.1 | <4.7 | <5.0 J | 6.7 | <4.8 | <4.5 | |
| Arsenic | mg/kg | NE | 7 | 10,000 | 10.2 | 17.1 | 6.1 | 46.4 | 15.6 | 81.9 | 10.9 | 4.2 | 8.5 | 11.7 | 12.7 | 4.9 | 7.3 | |
| Beryllium | mg/kg | NE | 1.3 | 10,000 | 0.26 | 0.46 | 0.3 | 0.55 | 0.55 | 0.44 | 0.39 | 0.22 | 0.34 | 0.3 J | 0.4 | 0.28 | 0.28 | |
| Cadmium | mg/kg | NE | 1,000 | 10,000 | <0.48 | <0.45 | <0.47 | 3.32 | 0.88 | 2.88 | <0.48 | <0.51 | <0.47 | <0.51 | <0.46 | <0.48 | <0.45 | |
| Chromium | mg/kg | NE | 10,000 | 10,000 | 3.2 | 11 | 5.7 | 13.6 | 6.4 | 5.9 | 10.4 | 4.1 | 7.1 | 7.4 | 9.6 | 3.3 | 6.3 | |
| Copper | mg/kg | NE | 10,000 | 10,000 | 50.6 | 17.4 | 6.1 | 1750 | 56.9 | 233 | 16 | 9.4 | 9.8 | 30.6 | 26.2 | 16.6 | 11.2 | |
| Lead | mg/kg | NE | 500 | 10,000 | 1550 D | 9.7 | 5.9 | 1610 D | 135 | 245 | 16.2 | <5.1 | <4.7 | 79.3 J | 60 | 16.6 | 6.6 | |
| Mercury | mg/kg | NE | 610 | 10,000 | 0.04 | <0.034 | <0.033 | 1.37 D | 0.227 | 0.415 | <0.034 | 0.042 | <0.034 | 0.753 D | 0.101 | <0.037 | <0.034 | |
| Nickel | mg/kg | NE | 10,000 | 10,000 | 11.6 | 16.7 | 6.3 | 57.9 | 9.6 | 10.5 | 13.6 | 7.2 | 10.2 | 9.5 | 11.4 | 8.2 | 8.6 | |
| Selenium | mg/kg | NE | 10,000 | 10,000 | <4.8 | <13.4 D | <4.7 | <9.9 D | <4.7 | <4.8 | <9.5 D | <5.1 | <9.3 D | <2.53 D | <13.7 D | <4.8 | <4.5 | |
| Silver | mg/kg | NE | 10,000 | 10,000 | <0.48 | 0.9 | <0.47 | 2.51 | 0.85 | 1.16 | 0.49 J | <0.51 J | <0.47 J | <0.51 | 0.77 | <0.48 | <0.45 | |
| Thallium | mg/kg | NE | 140 | 10,000 | <1.19 D | <1.11 D | <1.17 D | <1.22 D | <1.17 D | 2.05 D | <1.17 D | <1.26 D | <1.16 D | <1.24 D | <1.13 D | <1.19 D | <1.11 D | |
| Zinc | mg/kg | NE | 10,000 | 10,000 | 229 | 37.1 | 15 | 1280 D | 82.2 | 97.5 | 45.5 | 92.1 | 23.1 | 128 J | 34.6 | 21.8 | 29.1 | |
| EPA Method 8270 C PAHS | | | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | mg/kg | NE | 10,000 | 10,000 | <0.405 | <0.364 | <0.363 | 2.3 D | 0.622 | 10.8 D | <0.405 | <0.405 | <0.359 | 0.576 | <0.382 | <0.410 | <0.383 | |
| Acenaphthene | mg/kg | NE | 10,000 | 10,000 | <0.405 | <0.364 | <0.363 | <2.10 D | <0.393 | <2.08 D | <0.405 | <0.405 | <0.359 | <0.410 | <0.382 | <0.410 | <0.383 | |
| Acenaphthylene | mg/kg | NE | 10,000 | 10,000 | <0.405 | <0.364 | <0.363 | 5.14 D | 0.612 | 30.3 D | <0.405 | <0.405 | <0.359 | 0.926 | 0.516 | <0.410 | <0.383 | |
| Anthracene | mg/kg | NE | 10,000 | 10,000 | <0.405 | <0.364 | <0.363 | 5.91 D | 0.525 | 28.1 D | <0.405 | <0.405 | <0.359 | <0.410 | 0.54 | <0.410 | <0.383 | |
| Benzo [a] Anthracene | mg/kg | NE | 7.8 | 10,000 | 0.454 | <0.364 | <0.363 | 19 D | 2.61 | 97.3 D | <0.405 | <0.405 | <0.359 | 1.23 | 2.39 | <0.410 | <0.383 | |
| Benzo [a] Pyrene | mg/kg | NE | 0.8 | 10,000 | 0.269 | <0.182 | <0.182 | 15.7 D | 1.95 | 67.4 D | <0.203 | <0.203 | <0.180 | 1.54 | 2.03 | <0.205 | <0.192 | |
| Benzo [b] Fluoranthene | mg/kg | NE | 7.8 | 10,000 | <0.405 | <0.364 | <0.363 | 19.5 D | 3.06 | 83.4 D | <0.405 | <0.405 | <0.359 | 2.36 | 3.3 | <0.410 | <0.383 | |
| Benzo [g,h,i] Perylene | mg/kg | NE | 10,000 | 10,000 | <0.405 | <0.364 | <0.363 | 8.45 D | 1.02 | 15.5 D | <0.405 | <0.405 | <0.359 | 1 | 0.597 | <0.410 | <0.383 | |
| Benzo [k] Fluoranthene | mg/kg | NE | 78 | 10,000 | <0.405 | <0.364 | <0.363 | 7.57 D | 1.34 | 46.4 D | <0.405 | <0.405 | <0.359 | 1.03 | 1.03 | <0.410 | <0.383 | |
| Chrysene | mg/kg | NE | 780 | 10,000 | 0.624 | <0.182 | <0.182 | 18 D | 3.23 | 85.1 D | <0.203 | <0.203 | <0.180 | 1.46 | 2.04 | <0.205 | <0.192 | |
| Dibenzo [a,h] Anthracene | mg/kg | NE | 0.8 | 10,000 | <0.203 | <0.182 | <0.182 | 3.7 D | 0.451 | 8.48 D | <0.203 | <0.203 | <0.180 | 0.279 | 0.211 | <0.205 | <0.192 | |
| Fluoranthene | mg/kg | NE | 10,000 | 10,000 | 0.505 | <0.364 | <0.363 | 30.2 D | 3.15 | 154 D | <0.405 | <0.405 | <0.359 | 1.59 | 3.57 | <0.410 | <0.383 | |
| Fluorene | mg/kg | NE | 10,000 | 10,000 | <0.405 | <0.364 | <0.363 | 2.27 D | <0.393 | 15.5 D | <0.405 | <0.405 | <0.359 | <0.410 | <0.382 | <0.410 | <0.383 | |
| Indeno [1,2,3-cd] Pyrene | mg/kg | NE | 7.8 | 10,000 | <0.405 | <0.364 | <0.363 | 8.38 D | 0.899 | 16.5 D | <0.405 | <0.405 | <0.359 | 0.903 | 0.586 | <0.410 | <0.383 | |
| Naphthalene | mg/kg | NE | 10,000 | 10,000 | <0.405 | <0.364 | <0.363 | 5.34 D | 0.714 | 16.3 D | <0.405 | <0.405 | <0.359 | 2.33 | 0.76 | <0.410 | <0.383 | |
| Phenanthrene | mg/kg | NE | 10,000 | 10,000 | <0.405 | <0.364 | <0.363 | 16.9 D | 2.36 | 99.7 D | 0.538 | <0.405 | <0.359 | 0.754 | 1.48 | <0.410 | <0.383 | |
| Pyrene | mg/kg | NE | 10,000 | 10,000 | 0.551 | <0.364 | <0.363 | 19.2 D | 2.53 | 109 D | <0.405 | <0.405 | <0.359 | 1.29 | 2.34 | <0.410 | <0.383 | |

Notes

Location is located in the Natural Gas Regulator portion of the Property

Location is located at the LNG Facility

Location is located in the Former CNG Fueling Station portion

NE = Not Established

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Gray shaded cells and bolded text indicates the concentration exceeds the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).

Blue shaded cells indicate that the detection limit exceeds the RIDEM Method 1 Criteria.

Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

**TABLE 2
SUMMARY OF SOIL TPH, PAHS AND INORGANICS ANALYTICAL RESULTS**

642 Allens Avenue
Providence, Rhode Island

| | Units | RIDEM GB Leachability Criteria | RIDEM Industrial/ Commercial DEC | RIDEM UCL | GZ-314D S-3 1405669-02 05/27/2014 | GZ-315D S-3 1406074-01 05/28/2014 | GZ-317D S-2 1405662-03 05/23/2014 | GZ-318D S-3 1405662-02 05/23/2014 | GZ-319D S-3 1405669-01 05/27/2014 | GZ-320D S-3 1406074-03 05/28/2014 |
|---|-------|--------------------------------|----------------------------------|-----------|---|---|---|---|---|---|
| EPA Method 8100 M TOTAL PETROLEUM HYDROCARBON | | | | | | | | | | |
| Hydrocarbon Content | mg/kg | 2,500 | 2,500 | 30,000 | 6920 | 6310 D | 1410 | <44.5 | 482 | 161 |
| EPA Method 6010 B / 7471 A INORGANIC COMPOUNDS | | | | | | | | | | |
| Total Cyanide | mg/kg | NE | 10,000 | 10,000 | <1.10 | 52.3 D | <1.13 | <1.10 | <1.06 | 1.27 |
| Antimony | mg/kg | NE | 820 | 10,000 | <4.8 | 8.7 J | <5.2 | 5.1 | 5.5 | <4.6 J |
| Arsenic | mg/kg | NE | 7 | 10,000 | 3.8 | 15 | 6.1 | 6.4 | 6.2 | 4.4 |
| Beryllium | mg/kg | NE | 1.3 | 10,000 | 0.54 | 0.35 J | 0.33 | 0.37 | 0.4 | 0.22 J |
| Cadmium | mg/kg | NE | 1,000 | 10,000 | <0.48 | <0.47 | <0.52 | <0.47 | <0.47 | <0.46 |
| Chromium | mg/kg | NE | 10,000 | 10,000 | 7.7 | 8.7 | 8.3 | 8.3 | 9.4 | 4.9 |
| Copper | mg/kg | NE | 10,000 | 10,000 | 13.2 | 30.9 | 33.6 | 12 | 20.8 | 15.3 |
| Lead | mg/kg | NE | 500 | 10,000 | 30.7 | 299 J | 77 | 5.9 | 58 | 34.2 J |
| Mercury | mg/kg | NE | 610 | 10,000 | 0.047 | 0.451 | 0.821 D | <0.035 | 0.359 | <0.034 |
| Nickel | mg/kg | NE | 10,000 | 10,000 | 7.2 | 11.3 | 9 | 10.1 | 7.4 | 7.9 |
| Selenium | mg/kg | NE | 10,000 | 10,000 | <4.8 | <2.35 D | <5.2 | <9.3 D | <2.33 D | <2.32 D |
| Silver | mg/kg | NE | 10,000 | 10,000 | <0.48 | <0.47 | <0.52 | <0.47 | <0.47 | <0.46 |
| Thallium | mg/kg | NE | 140 | 10,000 | <1.19 D | <1.16 D | <1.28 D | <1.15 D | <1.15 D | <1.14 D |
| Zinc | mg/kg | NE | 10,000 | 10,000 | 28.7 | 46.4 J | 143 | 24.9 | 23.5 | 24.8 J |
| EPA Method 8270 C PAHS | | | | | | | | | | |
| 2-Methylnaphthalene | mg/kg | NE | 10,000 | 10,000 | 141 D | 10.5 D | <2.17 D | <0.376 | 0.389 | <0.393 |
| Acenaphthene | mg/kg | NE | 10,000 | 10,000 | 36.1 D | <4.06 D | <2.17 D | <0.376 | <0.369 | <0.393 |
| Acenaphthylene | mg/kg | NE | 10,000 | 10,000 | 8.01 D | 55.2 D | 4.66 D | <0.376 | 0.777 | <0.393 |
| Anthracene | mg/kg | NE | 10,000 | 10,000 | 25.9 D | 15.2 D | <2.17 D | <0.376 | 0.401 | <0.393 |
| Benzo [a] Anthracene | mg/kg | NE | 7.8 | 10,000 | 14.1 D | 22.3 D | 11.8 D | <0.376 | 0.952 | 0.488 |
| Benzo [a] Pyrene | mg/kg | NE | 0.8 | 10,000 | 10.7 D | 43.3 D | 14.9 D | <0.188 | 0.778 | 0.387 |
| Benzo [b] Fluoranthene | mg/kg | NE | 7.8 | 10,000 | 7.49 D | 57.6 D | 19.9 D | <0.376 | 1.63 | 0.487 |
| Benzo [g,h,i] Perylene | mg/kg | NE | 10,000 | 10,000 | 2.95 D | 20.1 D | 12.3 D | <0.376 | 0.592 | <0.393 |
| Benzo [k] Fluoranthene | mg/kg | NE | 78 | 10,000 | 3.02 D | 22.7 D | 8.99 D | <0.376 | 0.543 | <0.393 |
| Chrysene | mg/kg | NE | 780 | 10,000 | 12.5 D | 28 D | 12.5 D | <0.188 | 1.07 | 0.516 |
| Dibenzo [a,h] Anthracene | mg/kg | NE | 0.8 | 10,000 | <1.00 D | 6.37 D | 3.42 D | <0.188 | 0.217 | <0.197 |
| Fluoranthene | mg/kg | NE | 10,000 | 10,000 | 27.7 D | 26.9 D | 16.3 D | <0.376 | 1.62 | 0.925 |
| Fluorene | mg/kg | NE | 10,000 | 10,000 | 24.6 D | 6.32 D | <2.17 D | <0.376 | <0.369 | <0.393 |
| Indeno [1,2,3-cd] Pyrene | mg/kg | NE | 7.8 | 10,000 | 2.56 D | 17.7 D | 10.2 D | <0.376 | 0.602 | <0.393 |
| Naphthalene | mg/kg | NE | 10,000 | 10,000 | 127 D | 17.2 D | 8.57 D | <0.376 | 1.44 | 0.568 |
| Phenanthrene | mg/kg | NE | 10,000 | 10,000 | 106 D | 21 D | 4.62 D | <0.376 | 1.22 | 0.686 |
| Pyrene | mg/kg | NE | 10,000 | 10,000 | 34.5 D | 51.7 D | 12.9 D | <0.376 | 1.21 | 0.728 |

Notes

Location is located in the Natural Gas Regulator portion of the Property

Location is located at the LNG Facility

Location is located in the Former CNG Fueling Station portion

NE = Not Established

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Gray shaded cells and bolded text indicates the concentration exceeds the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).

Blue shaded cells indicate that the detection limit exceeds the RIDEM Method 1 Criteria.

Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

**TABLE 3
SUMMARY OF SOIL TPH FINGERPRINTING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| | | GZ-302D 18-20 FT 5/29/2014 | GZ-303D 14-16 FT 5/28/2014 | GZ-304D 8-10 FT 5/28/2014 | GZ-304D 12-14 FT 5/28/2014 | GZ-305S 8-10 FT 5/22/2014 | GZ-306S 6-8 FT 5/22/2014 | GZ-306S 8-10 FT 5/22/2014 | GZ-307S 10-12 FT 6/3/2014 | GZ-308S 6-8 FT 6/4/2014 | GZ-309D 6-8 FT 5/20/2014 | GZ-310 8-9 FT 6/4/2014 | GZ-312D 6-8 FT 5/23/2014 | GZ-313D 18-20 FT 5/27/2014 |
|-------------------------------------|-------|----------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|--------------------------------|---------------------------------|---------------------------------|-------------------------------|--------------------------------|------------------------------|--------------------------------|----------------------------------|
| | Units | 1406002-06 | 1406002-05 | 1406002-03 | 1406002-04 | 1405021-02 | 1405021-03 | 1405021-04 | 1406010-01 | 1406010-02 | 1405021-01 | 1406010-03 | 1406002-01 | 1406002-02 |
| TOTAL PETROLEUM HYDROCARBONS | | | | | | | | | | | | | | |
| TPH | mg/kg | 1,820 | 1,730 | 63,100 | 606,000 | 68,500 | 15,300 | 6,330 | 8,430 | 8,140 | 1,920 | 42,700 | 4,270 | 1,210 |
| TPH Fingerprint | NA | PET | PET | CT | CT | CT/PET | CT | CT/PET | PET | PET | PET | CT | PET | CT |

Notes:

| | |
|--------|--|
| CT | The characteristics of the chromatogram for these indicate that the product is composed exclusively of tar impacted hydrocarbons. The tar material present in these field samples indicate varying degrees of weathering. |
| CT/PET | The characteristics of the chromatogram for these indicate that the product is composed of a mixture of middle distillate, heavy petroleum and coal tar. The tar component was noted as highly weathered. |
| PET | The characteristics of the chromatogram for these indicate that the product is composed of largely middle distillate petroleum and to a lesser extent, heavy petroleum. The petroleum product was noted as highly weathered. |
| NA | = Not Applicable |

**TABLE 4
SUMMARY OF SURFACE SOIL LEAD SAMPLING ANALYTICAL RESULTS**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM Industrial/Commercial DEC | RIDEM UCL | RCRA Hazardous Waste Criteria | Units | SS-301 0-1ft 07/01/2014 1407013-09 | SS-302 0-1ft 07/01/2014 1407013-08 | SS-303 0-1ft 07/01/2014 1407013-07 07/20/2015 1507459-05 | SS-304 0-1ft 07/01/2014 1407013-05 07/20/2015 1507459-04 | SS-305 0-1ft 07/01/2014 1407013-06 | SS-306 0-1ft 07/01/2014 1407013-10 | SS-307 0-1ft 07/01/2014 1407013-03 | SS-308 0-1ft 07/01/2014 1407013-02 07/20/2015 1507459-01 | SS-309 0-1ft 07/01/2014 1407013-01 07/20/2015 1507459-02 | SS-310 0-1ft 07/01/2014 1407013-04 07/20/2015 1507459-03 |
|---|--------------------------------|---------------------------------|-----------|-------------------------------|-------|--|--|--|--|--|--|--|--|--|--|
| EPA Method 6010 B / 7471 A INORGANIC COMPOUNDS | | | | | | | | | | | | | | | |
| Lead | NE | 500 | 10,000 | NE | mg/kg | <4.4 | 2090 | 2040 | 448 | 1610 | <4.4 | 1390 | 5650 | 4490 | 2880 |
| EPA Method 1311 TCLP Metals | | | | | | | | | | | | | | | |
| Lead | NE | NE | NE | 5 | mg/L | <0.050 | 4.42 | 5.12 | 11.5 | 3.35 | <0.050 | 4.75 | 36 | 12.6 | 16.7 |
| EPA Method 1312 SPLP Metals | | | | | | | | | | | | | | | |
| Lead | NE | NE | NE | 5 | mg/L | NA | NA | 0.564 | 0.232 | NA | NA | NA | 0.843 | 0.531 | 2.93 |

Notes

- Location is located in the Natural Gas Regulator portion of the Property
- Location is located at the LNG Facility
- Location is located in the Former CNG Fueling Station portion of the Property

NE = Not Established NA = Not Analyzed

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Gray shaded cells and bolded text indicates the concentration exceeds the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).

Blue shaded cells indicate that the detection limit exceeds the RIDEM Method 1 Criteria.

Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

A concentration shown with **red and bolded text** exceeds the RCRA Hazardous Waste Criteria.

TABLE 5
SUMMARY OF OXIDE BOX AREA SOIL VOC ANALYTICAL RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| | | RIDEM GB Leachability Criteria | RIDEM Industrial/ Commercial DEC | RIDEM UCL | GZ-321S S-2 1405486-01 05/20/2014 | GZ-322S S-2 1405486-02 05/20/2014 | GZ-323S S-2 1405486-03 05/20/2014 | GZ-324 S-2 1405486-04 05/20/2014 |
|--|-------|---|---|--------------|---|---|---|--|
| EPA Method 8260 B Volatile Organics | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | mg/kg | NE | 220 | 10,000 | <0.0790 | <0.114 | <0.0722 | <1.12 D |
| 1,1,1-Trichloroethane | mg/kg | 160 | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,1,2,2-Tetrachloroethane | mg/kg | NE | 29 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,1,2-Trichloroethane | mg/kg | NE | 100 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,1-Dichloroethane | mg/kg | NE | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,1-Dichloroethene | mg/kg | 0.7 | 9.5 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,1-Dichloropropene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,2,3-Trichlorobenzene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,2,3-Trichloropropane | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,2,4-Trichlorobenzene | mg/kg | NE | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,2,4-Trimethylbenzene | mg/kg | NE | NE | 10,000 | <0.0395 | 0.0354 J | <0.0361 | 7.39 D |
| 1,2-Dibromo-3-Chloropropane | mg/kg | NE | 4.1 | 10,000 | <0.237 | <0.342 | <0.217 | <3.37 D |
| 1,2-Dibromoethane | mg/kg | NE | 0.07 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,2-Dichlorobenzene | mg/kg | NE | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,2-Dichloroethane | mg/kg | 2.3 | 63 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,2-Dichloropropane | mg/kg | 70 | 84 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,3,5-Trimethylbenzene | mg/kg | NE | NE | 10,000 | <0.0395 | 0.0205 J | <0.0361 | 3.19 D |
| 1,3-Dichlorobenzene | mg/kg | NE | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,3-Dichloropropane | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,4-Dichlorobenzene | mg/kg | NE | 240 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 1,4-Dioxane - Screen | mg/kg | NE | NE | 10,000 | <3.95 | <5.70 | <3.61 | <56.1 D |
| 1-Chlorohexane | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 2,2-Dichloropropane | mg/kg | NE | NE | 10,000 | <0.0790 | <0.114 | <0.0722 | <1.12 D |
| 2-Butanone | mg/kg | NE | 10,000 | 10,000 | <0.988 | <1.43 | <0.902 | <14.0 D |
| 2-Chlorotoluene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 2-Hexanone | mg/kg | NE | NE | 10,000 | <0.395 | <0.570 | <0.361 | <5.61 D |
| 4-Chlorotoluene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 4-Isopropyltoluene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| 4-Methyl-2-Pentanone | mg/kg | NE | 10,000 | 10,000 | <0.395 | <0.570 | <0.361 | <5.61 D |
| Acetone | mg/kg | NE | 10,000 | 10,000 | <0.988 | <1.43 | <0.902 | <14.0 D |
| Benzene | mg/kg | 4.3 | 200 | 10,000 | <0.0395 | 0.0228 J | <0.0361 | 0.146 D,J |
| Bromobenzene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Bromochloromethane | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Bromodichloromethane | mg/kg | NE | 92 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Bromoform | mg/kg | NE | 720 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Bromomethane | mg/kg | NE | 2,900 | 10,000 | <0.0790 | <0.114 | <0.0722 | <1.12 D |
| Carbon Disulfide | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Carbon Tetrachloride | mg/kg | 5 | 44 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Chlorobenzene | mg/kg | 100 | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Chloroethane | mg/kg | NE | NE | 10,000 | <0.0790 | <0.114 | <0.0722 | <1.12 D |
| Chloroform | mg/kg | NE | 940 | 10,000 | <0.0395 | <0.057 | <0.0361 | <0.561 D |
| Chloromethane | mg/kg | NE | NE | 10,000 | <0.0790 | <0.114 | <0.0722 | <1.12 D |
| cis-1,2-Dichloroethene | mg/kg | 60 | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| cis-1,3-Dichloropropene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Dibromochloromethane | mg/kg | NE | 68 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Dibromomethane | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Dichlorodifluoromethane | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Diethyl Ether | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Di-isopropyl ether | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Ethyl tertiary-butyl ether | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Ethylbenzene | mg/kg | 62 | 10,000 | 10,000 | <0.0395 | 0.0217 J | <0.0361 | 4 D |
| Hexachlorobutadiene | mg/kg | NE | 73 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Isopropylbenzene | mg/kg | NE | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | 0.213 D,J |
| Methyl tert-Butyl Ether | mg/kg | 100 | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Methylene Chloride | mg/kg | NE | 760 | 10,000 | <0.198 | <0.285 | <0.180 | <2.81 D |
| Naphthalene | mg/kg | NE | 10,000 | 10,000 | 0.0435 | 0.48 | <0.0361 | 56.2 D |
| n-Butylbenzene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | 0.269 D,J |
| n-Propylbenzene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | 0.752 D |
| sec-Butylbenzene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Styrene | mg/kg | 64 | 1,900 | 10,000 | <0.0395 | 0.0354 J | <0.0361 | <0.561 D |
| tert-Butylbenzene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Tertiary-amyl methyl ether | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Tetrachloroethene | mg/kg | 4.2 | 110 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Tetrahydrofuran | mg/kg | NE | NE | 10,000 | <0.395 | <0.570 | <0.361 | <5.61 D |
| Toluene | mg/kg | 54 | 10,000 | 10,000 | <0.0395 | 0.106 | <0.0361 | 0.146 D,J |
| trans-1,2-Dichloroethene | mg/kg | 92 | 10,000 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| trans-1,3-Dichloropropene | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Trichloroethene | mg/kg | 20 | 520 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Trichlorofluoromethane | mg/kg | NE | NE | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Vinyl Acetate | mg/kg | NE | NE | 10,000 | <0.198 | <0.285 | <0.180 | <2.81 D |
| Vinyl Chloride | mg/kg | NE | 3 | 10,000 | <0.0395 | <0.0570 | <0.0361 | <0.561 D |
| Xylene O | mg/kg | NE | 10,000 | 10,000 | <0.0395 | 0.0319 J | <0.0361 | 0.898 D |
| Xylene P,M | mg/kg | NE | 10,000 | 10,000 | <0.0790 | 0.0969 J | <0.0722 | 17 D |
| Xylenes (Total) | mg/kg | NE | 10,000 | 10,000 | <0.0790 D | 0.129 D | <0.0722 D | 17.9 D |

Notes

Location is located in the Natural Gas Regulator portion of the Property

Location is located at the LNG Facility

Location is located in the Former CNG Fueling Station portion of the Property

NE = Not Established

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Gray shaded cells and bolded text indicates the concentration exceeds the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).

Blue shaded cells indicate that the detection limit exceeds the RIDEM Method 1 Criteria.

Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

TABLE 6
SUMMARY OF OXIDE BOX AREA TPH, SVOCs, PCBs, METALS ANALYTICAL RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM Industrial/Commercial DEC | RIDEM UCL | RCRA Hazardous Waste Criteria | Units | GZ-321S S-2 1405486-01 05/20/2014 | GZ-322S S-2 1405486-02 05/20/2014 | GZ-323S S-2 1405486-03 05/20/2014 | GZ-324 S-2 1405486-04 05/20/2014 |
|---|--------------------------------|---------------------------------|-----------|-------------------------------|-------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|
| EPA Method 8100 M TOTAL PETROLEUM HYDROCARBON | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | NE | mg/kg | <39.0 | 1090 | <42.6 | 4930 |
| EPA Method 6010 B / 7471 A INORGANIC COMPOUNDS | | | | | | | | | |
| Arsenic | NE | 7 | 10,000 | NE | mg/kg | 10.3 | 12 | 12.6 | 12 |
| Barium | NE | 10,000 | 10,000 | NE | mg/kg | 17.2 | 26.3 | 18.6 | 32.5 |
| Cadmium | NE | 1,000 | 10,000 | NE | mg/kg | <0.44 | <0.46 | <0.45 | <0.49 |
| Chromium | NE | 10,000 | 10,000 | NE | mg/kg | 5.7 | 4 | 13.6 | 7.2 |
| Lead | NE | 500 | 10,000 | NE | mg/kg | 42.7 | 86.6 | 8.6 | 87.2 |
| Mercury | NE | 610 | 10,000 | NE | mg/kg | <0.033 | 0.316 | <0.033 | 0.98 D |
| Selenium | NE | 10,000 | 10,000 | NE | mg/kg | <8.7 D | <13.7 D | <13.4 D | <4.9 |
| Silver | NE | 10,000 | 10,000 | NE | mg/kg | 0.55 J | 0.81 J | 0.62 J | 0.5 J |
| Reactive Cyanide | NE | NE | NE | NE | mg/kg | <2.0 | <2.0 | <2.0 | <2.0 |
| Reactive Sulfide | NE | NE | NE | NE | mg/kg | <2.0 | <2.0 | <2.0 | <2.0 |
| EPA Method 1311 TCLP Metals | | | | | | | | | |
| Lead | NE | NE | NE | 5 | mg/L | <0.050 | <0.050 | <0.050 | 0.154 |
| EPA Method 8082A POLYCHLORINATED BIPHENYLS | | | | | | | | | |
| Aroclor 1016 | 10 | 10 | 10,000 | NE | mg/kg | <0.0536 | <0.0570 | <0.0548 | <0.0613 |
| Aroclor 1221 | 10 | 10 | 10,000 | NE | mg/kg | <0.0536 | <0.0570 | <0.0548 | <0.0613 |
| Aroclor 1232 | 10 | 10 | 10,000 | NE | mg/kg | <0.0536 | <0.0570 | <0.0548 | <0.0613 |
| Aroclor 1242 | 10 | 10 | 10,000 | NE | mg/kg | <0.0536 | <0.0570 | <0.0548 | <0.0613 |
| Aroclor 1248 | 10 | 10 | 10,000 | NE | mg/kg | <0.0536 | <0.0570 | <0.0548 | <0.0613 |
| Aroclor 1254 | 10 | 10 | 10,000 | NE | mg/kg | <0.0536 | <0.0570 | <0.0548 | <0.0613 |
| Aroclor 1260 | 10 | 10 | 10,000 | NE | mg/kg | <0.0536 | <0.0570 | <0.0548 | <0.0613 |
| Aroclor 1262 | 10 | 10 | 10,000 | NE | mg/kg | <0.0536 | <0.0570 | <0.0548 | <0.0613 |
| Aroclor 1268 | 10 | 10 | 10,000 | NE | mg/kg | <0.0536 | <0.0570 | <0.0548 | <0.0613 |
| EPA Method 8270C SEMI-VOLATILE ORGANIC COMPOUNDS | | | | | | | | | |
| 1,1-Biphenyl | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | 0.565 |
| 1,2,4-Trichlorobenzene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 1,2-Dichlorobenzene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 1,3-Dichlorobenzene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 1,4-Dichlorobenzene | NE | 240 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2,3,4,6-Tetrachlorophenol | NE | NE | 10,000 | NE | mg/kg | <1.71 | <1.93 | <1.89 | <2.06 |
| 2,4,5-Trichlorophenol | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2,4,6-Trichlorophenol | NE | 520 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2,4-Dichlorophenol | NE | 6,100 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2,4-Dimethylphenol | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2,4-Dinitrophenol | NE | 4,100 | 10,000 | NE | mg/kg | <1.71 | <1.93 | <1.89 | <2.06 |
| 2,4-Dinitrotoluene | NE | 8.4 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2,6-Dinitrotoluene | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2-Chloronaphthalene | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2-Chlorophenol | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | 0.516 | <0.378 | 8.33 D |
| 2-Methylphenol | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2-Nitroaniline | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 2-Nitrophenol | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 3,3'-Dichlorobenzidine | NE | 13 | 10,000 | NE | mg/kg | <0.684 | <0.772 | <0.757 | <0.822 |
| 3+4-Methylphenol | NE | NE | 10,000 | NE | mg/kg | <0.684 | <0.772 | <0.757 | <0.822 |
| 3-Nitroaniline | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 4,6-Dinitro-2-Methylphenol | NE | NE | 10,000 | NE | mg/kg | <1.71 | <1.93 | <1.89 | <2.06 |
| 4-Bromophenyl-phenylether | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 4-Chloro-3-Methylphenol | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 4-Chloroaniline | NE | 8,200 | 10,000 | NE | mg/kg | <0.684 | <0.772 | <0.757 | <0.822 |
| 4-Chloro-phenyl-phenyl ether | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 4-Nitroaniline | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| 4-Nitrophenol | NE | NE | 10,000 | NE | mg/kg | <1.71 | <1.93 | <1.89 | <2.06 |
| Acenaphthene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | 0.447 |

Notes

Location is located in the Natural Gas Regulator portion of the Property

Location is located at the LNG Facility

Location is located in the Former CNG Fueling Station portion of the Property

NE = Not Established

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

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Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

A concentration shown with **red and bolded text** exceeds the RCRA Hazardous Waste Criteria.

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

TABLE 6
SUMMARY OF OXIDE BOX AREA TPH, SVOCs, PCBs, METALS ANALYTICAL RESULTS
642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM Industrial/Commercial DEC | RIDEM UCL | RCRA Hazardous Waste Criteria | Units | GZ-321S S-2 1405486-01 05/20/2014 | GZ-322S S-2 1405486-02 05/20/2014 | GZ-323S S-2 1405486-03 05/20/2014 | GZ-324 S-2 1405486-04 05/20/2014 |
|---|--------------------------------|---------------------------------|-----------|-------------------------------|-------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|
| EPA Method 8270C SEMI-VOLATILE ORGANIC COMPOUNDS | | | | | | | | | |
| Acenaphthylene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | 1.1 | <0.378 | 2.63 |
| Acetophenone | NE | NE | 10,000 | NE | mg/kg | <0.684 | <0.772 | <0.757 | <0.822 |
| Aniline | NE | NE | 10,000 | NE | mg/kg | <0.684 | <0.772 | <0.757 | <0.822 |
| Anthracene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | 0.965 |
| Azobenzene | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | NE | mg/kg | <0.341 | 0.558 | <0.378 | 1.94 |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | NE | mg/kg | <0.171 | 0.261 | <0.189 | 1 |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | NE | mg/kg | <0.341 | 1.63 | <0.378 | 3.35 |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | 0.425 |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | NE | mg/kg | <0.341 | 0.638 | <0.378 | 1.02 |
| Benzoic Acid | NE | NE | 10,000 | NE | mg/kg | <1.71 | <1.93 | <1.89 | <2.06 |
| Benzyl Alcohol | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| bis(2-Chloroethoxy)methane | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| bis(2-Chloroethyl)ether | NE | 5.2 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| bis(2-chloroisopropyl)Ether | NE | 82 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| bis(2-Ethylhexyl)phthalate | NE | 410 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Butylbenzylphthalate | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Carbazole | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | 0.518 |
| Chrysene | NE | 780 | 10,000 | NE | mg/kg | <0.171 | 1.05 | <0.189 | 2.88 |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | NE | mg/kg | <0.171 | <0.193 | <0.189 | 0.244 |
| Dibenzofuran | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | 0.528 |
| Diethylphthalate | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Dimethylphthalate | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Di-n-butylphthalate | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Di-n-octylphthalate | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Fluoranthene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | 0.6 | <0.378 | 2.76 |
| Fluorene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | 0.764 |
| Hexachlorobenzene | NE | 3.6 | 10,000 | NE | mg/kg | <0.171 | <0.193 | <0.189 | <0.206 |
| Hexachlorobutadiene | NE | 73 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Hexachlorocyclopentadiene | NE | NE | 10,000 | NE | mg/kg | <1.71 | <1.93 | <1.89 | <2.06 |
| Hexachloroethane | NE | 410 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| EPA Method 8270C SEMI-VOLATILE ORGANIC COMPOUNDS | | | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | NE | mg/kg | <0.341 | 0.433 | <0.378 | 0.528 |
| Isophorone | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Naphthalene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | 1.55 | <0.378 | 55.7 |
| Nitrobenzene | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| N-Nitrosodimethylamine | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| N-Nitroso-Di-n-Propylamine | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| N-nitrosodiphenylamine | NE | NE | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Pentachlorophenol | NE | 48 | 10,000 | NE | mg/kg | <1.71 | <1.93 | <1.89 | <2.06 |
| Phenanthrene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | 2.5 |
| Phenol | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | <0.386 | <0.378 | <0.410 |
| Pyrene | NE | 10,000 | 10,000 | NE | mg/kg | <0.341 | 0.617 | <0.378 | 2.23 |
| Pyridine | NE | NE | 10,000 | NE | mg/kg | <1.71 | <1.93 | <1.89 | <2.06 |

Notes

Location is located in the Natural Gas Regulator portion of the Property

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Blue shaded cells indicate that the detection limit exceeds the RIDEM Method 1 Criteria.

Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

A concentration shown with **red and bolded text** exceeds the RCRA Hazardous Waste Criteria.

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

**TABLE 7
SUMMARY OF SOIL QA/QC VOC ANALYTICAL RESULTS**

642 Allens Avenue
Providence, Rhode Island

| | | RIDEM GB Leachability Criteria | RIDEM Industrial/ Commercial DEC | RIDEM UCL | Trip Blank 51914 1405485-04 05/19/2014 | Trip Blank 52014 1405486-06 05/20/2014 | Trip Blank 1405579-04 05/21/2014 | Trip Blank 52214 1405585-04 05/22/2014 | Trip Blank-52314 1405662-04 05/23/2014 | Trip Blank 1405669-03 05/27/2014 | Trip Blank-52814 1406074-05 05/28/2014 | GZ-313D S-3 1405553-02 05/19/2014 | BD-051914 1405553-03 05/19/2014 | GZ-320D S-3 1406074-03 05/28/2014 | BD-052814 1406074-04 05/28/2014 | GZ-324 S-2 1405486-04 05/20/2014 | BD-052014 1405486-05 05/20/2014 |
|--|-------|--------------------------------------|---|--------------|--|--|--|--|--|--|--|---|---------------------------------------|---|---------------------------------------|--|---------------------------------------|
| EPA Method 8260 B Volatile Organics | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | mg/kg | NE | 220 | 10,000 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.0847 | <0.0830 | <0.0837 | <0.0786 | <1.12 D | <0.162 |
| 1,1,1-Trichloroethane | mg/kg | 160 | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,1,2,2-Tetrachloroethane | mg/kg | NE | 29 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,1,2-Trichloroethane | mg/kg | NE | 100 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,1-Dichloroethane | mg/kg | NE | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,1-Dichloroethene | mg/kg | 0.7 | 9.5 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,1-Dichloropropene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,2,3-Trichlorobenzene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,2,3-Trichloropropane | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,2,4-Trichlorobenzene | mg/kg | NE | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,2,4-Trimethylbenzene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | 7.39 D | 0.44 |
| 1,2-Dibromo-3-Chloropropane | mg/kg | NE | 4.1 | 10,000 | <0.300 | <0.300 | <0.300 | <0.300 | <0.300 | <0.300 | <0.300 | <0.254 | <0.249 | <0.251 | <0.236 | <3.37 D | <0.485 |
| 1,2-Dibromoethane | mg/kg | NE | 0.07 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,2-Dichlorobenzene | mg/kg | NE | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,2-Dichloroethane | mg/kg | 2.3 | 63 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,2-Dichloropropane | mg/kg | 70 | 84 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,3,5-Trimethylbenzene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | 3.19 D | 0.239 |
| 1,3-Dichlorobenzene | mg/kg | NE | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,3-Dichloropropane | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,4-Dichlorobenzene | mg/kg | NE | 240 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 1,4-Dioxane - Screen | mg/kg | NE | NE | 10,000 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <4.23 | <4.15 | <4.18 | <3.93 | <56.1 D | <8.09 |
| 1-Chlorohexane | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 2,2-Dichloropropane | mg/kg | NE | NE | 10,000 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.0847 | <0.0830 | <0.0837 | <0.0786 | <1.12 D | <0.162 |
| 2-Butanone | mg/kg | NE | 10,000 | 10,000 | <1.25 | <1.25 | <1.25 | <1.25 | <1.25 | <1.25 | <1.25 | <1.06 | <1.04 | <1.05 | <0.982 | <14.0 D | <2.02 |
| 2-Chlorotoluene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 2-Hexanone | mg/kg | NE | NE | 10,000 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.423 | <0.415 | <0.418 | <0.393 | <5.61 D | <0.809 |
| 4-Chlorotoluene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 4-Isopropyltoluene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| 4-Methyl-2-Pentanone | mg/kg | NE | 10,000 | 10,000 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.423 | <0.415 | <0.418 | <0.393 | <5.61 D | <0.809 |
| Acetone | mg/kg | NE | 10,000 | 10,000 | <1.25 | <1.25 | <1.25 | <1.25 | <1.25 | <1.25 | <1.25 | <1.06 | <1.04 | <1.05 | <0.982 | <14.0 D | <2.02 |
| Benzene | mg/kg | 4.3 | 200 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | 0.0519 | 0.0236 J | 0.146 D,J | 0.0695 J |
| Bromobenzene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Bromochloromethane | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Bromodichloromethane | mg/kg | NE | 92 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Bromoform | mg/kg | NE | 720 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Bromomethane | mg/kg | NE | 2,900 | 10,000 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.0847 | <0.0830 | <0.0837 | <0.0786 | <1.12 D | <0.162 |
| Carbon Disulfide | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Carbon Tetrachloride | mg/kg | 5 | 44 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Chlorobenzene | mg/kg | 100 | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Chloroethane | mg/kg | NE | NE | 10,000 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.0847 | <0.0830 | <0.0837 | <0.0786 | <1.12 D | <0.162 |
| Chloroform | mg/kg | NE | 940 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | 0.021 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Chloromethane | mg/kg | NE | NE | 10,000 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.0847 | <0.0830 | <0.0837 | <0.0786 | <1.12 D | <0.162 |
| cis-1,2-Dichloroethene | mg/kg | 60 | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| cis-1,3-Dichloropropene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Dibromochloromethane | mg/kg | NE | 68 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Dibromomethane | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Dichlorodifluoromethane | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Diethyl Ether | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Di-isopropyl ether | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Ethyl tertiary-butyl ether | mg/kg | NE | NE | 10,00 | | | | | | | | | | | | | |

**TABLE 7
SUMMARY OF SOIL QA/QC VOC ANALYTICAL RESULTS**

642 Allens Avenue
Providence, Rhode Island

| | | RIDEM GB Leachability Criteria | RIDEM Industrial/ Commercial DEC | RIDEM UCL | Trip Blank 51914 1405485-04 05/19/2014 | Trip Blank 52014 1405486-06 05/20/2014 | Trip Blank 1405579-04 05/21/2014 | Trip Blank 52214 1405585-04 05/22/2014 | Trip Blank-52314 1405662-04 05/23/2014 | Trip Blank 1405669-03 05/27/2014 | Trip Blank-52814 1406074-05 05/28/2014 | GZ-313D S-3 1405553-02 05/19/2014 | BD-051914 1405553-03 05/19/2014 | GZ-320D S-3 1406074-03 05/28/2014 | BD-052814 1406074-04 05/28/2014 | GZ-324 S-2 1405486-04 05/20/2014 | BD-052014 1405486-05 05/20/2014 |
|--|-------|--------------------------------------|---|--------------|--|--|--|--|--|--|--|---|---------------------------------------|---|---------------------------------------|--|---------------------------------------|
| EPA Method 8260 B Volatile Organics | | | | | | | | | | | | | | | | | |
| Methyl tert-Butyl Ether | mg/kg | 100 | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Methylene Chloride | mg/kg | NE | 760 | 10,000 | <0.250 | <0.250 | <0.250 | <0.250 | <0.250 | <0.250 | <0.250 | <0.212 | <0.207 | <0.209 | <0.196 | <2.81 D | <0.404 |
| Naphthalene | mg/kg | NE | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | 0.0618 | 0.0722 | 0.0268 J | <0.0393 | 56.2 D | 3.65 |
| n-Butylbenzene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | 0.0373 J | 0.0324 J | <0.0418 | <0.0393 | 0.269 D,J | <0.0809 |
| n-Propylbenzene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | 0.752 D | <0.0809 |
| sec-Butylbenzene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | 0.011 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Styrene | mg/kg | 64 | 1,900 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | 0.146 |
| tert-Butylbenzene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Tertiary-amyl methyl ether | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Tetrachloroethene | mg/kg | 4.2 | 110 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Tetrahydrofuran | mg/kg | NE | NE | 10,000 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.423 | <0.415 | <0.418 | <0.393 | <5.61 D | <0.809 |
| Toluene | mg/kg | 54 | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | 0.0142 J | 0.0141 J | 0.146 D,J | 0.176 |
| trans-1,2-Dichloroethene | mg/kg | 92 | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| trans-1,3-Dichloropropene | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Trichloroethene | mg/kg | 20 | 520 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Trichlorofluoromethane | mg/kg | NE | NE | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Vinyl Acetate | mg/kg | NE | NE | 10,000 | <0.250 | <0.250 | <0.250 | <0.250 | <0.250 | <0.250 | <0.250 | <0.212 | <0.207 | <0.209 | <0.196 | <2.81 D | <0.404 |
| Vinyl Chloride | mg/kg | NE | 3 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | <0.561 D | <0.0809 |
| Xylene O | mg/kg | NE | 10,000 | 10,000 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0500 | <0.0423 | <0.0415 | <0.0418 | <0.0393 | 0.898 D | 0.184 |
| Xylene P,M | mg/kg | NE | 10,000 | 10,000 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.0847 | <0.0830 | <0.0837 | 0.0165 J | 17 D | 1.09 |
| Xylenes (Total) | mg/kg | NE | 10,000 | 10,000 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.0847 D | <0.0830 D | <0.0837 D | <0.0786 D | 17.9 D | 1.27 D |

Notes

NE = Not Established

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Gray shaded cells and bolded text indicates the concentration exceeds the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).

Blue shaded cells indicate that the detection limit exceeds the RIDEM Method 1 Criteria.

Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

BD-051914 is a blind duplicate of GZ-313D S-3

BD-052814 is a blind duplicate for GZ-320D S-3

BD-052014 is a blind duplicate of GZ-324 S-2

**TABLE 8
SUMMARY OF SOIL QA/QC SVOCs, TPH, PCBs, INORGANICS ANALYTICAL RESULTS**

642 Allens Avenue
Providence, Rhode Island

| | Units | RIDEM GB Leachability Criteria | RIDEM Industrial/ Commercial DEC | RIDEM UCL | RCRA Hazardous Waste Criteria | GZ-313D S-3 1405553-02 05/19/2014 | BD-051914 1405553-03 05/19/2014 | GZ-320D S-3 1406074-03 05/28/2014 | BD-052814 1406074-04 05/28/2014 | SS-306 0-1ft 1407013-10 07/01/2014 | BD 070114 1407013-11 07/01/2014 | GZ-324 S-2 1405486-04 05/20/2014 | BD-052014 1405486-05 05/20/2014 |
|---|-------|--------------------------------------|---|--------------|-------------------------------------|---|---------------------------------------|---|---------------------------------------|--|---------------------------------------|--|---------------------------------------|
| EPA Method 8100 M TOTAL PETROLEUM HYDROCARBON | | | | | | | | | | | | | |
| Hydrocarbon Content | mg/kg | 2,500 | 2,500 | 30,000 | NE | 590 | 436 | 161 | 160 | NA | NA | 4930 | 4520 |
| EPA Method 6010 B / 7471 A INORGANIC COMPOUNDS | | | | | | | | | | | | | |
| Total Cyanide | mg/kg | NE | 10,000 | 10,000 | NE | <1.08 | <1.04 | 1.27 | 1.33 | NA | NA | NA | NA |
| Antimony | mg/kg | NE | 820 | 10,000 | NE | <4.5 | <4.5 | <4.6 J | <4.7 J | NA | NA | NA | NA |
| Arsenic | mg/kg | NE | 7 | 10,000 | NE | 7.3 | 8.6 | 4.4 | 7.3 | NA | NA | 12 | 13 |
| Barium | mg/kg | NE | NE | NE | NE | NA | NA | NA | NA | NA | NA | 32.5 | 43.7 |
| Beryllium | mg/kg | NE | 1.3 | 10,000 | NE | 0.28 | 0.31 | 0.22 J | 0.29 J | NA | NA | NA | NA |
| Cadmium | mg/kg | NE | 1,000 | 10,000 | NE | <0.45 | <0.45 | <0.46 | <0.47 | NA | NA | <0.49 | <0.59 |
| Chromium | mg/kg | NE | 10,000 | 10,000 | NE | 6.3 | 6.7 | 4.9 | 7.2 | NA | NA | 7.2 | 6.9 |
| Copper | mg/kg | NE | 10,000 | 10,000 | NE | 11.2 | 12.3 | 15.3 | 16.2 | NA | NA | NA | NA |
| Lead | mg/kg | NE | 500 | 10,000 | NE | 6.6 | 8.2 | 34.2 J | 41.9 J | <4.4 | <4.5 | 87.2 | 131 |
| Mercury | mg/kg | NE | 610 | 10,000 | NE | <0.034 | <0.033 | <0.034 | <0.036 | NA | NA | 0.98 D | 2.03 D |
| Nickel | mg/kg | NE | 10,000 | 10,000 | NE | 8.6 | 8.6 | 7.9 | 11.4 | NA | NA | NA | NA |
| Selenium | mg/kg | NE | 10,000 | 10,000 | NE | <4.5 | <13.4 D | <2.32 D | <2.34 D | NA | NA | <4.9 | <5.9 |
| Silver | mg/kg | NE | 10,000 | 10,000 | NE | <0.45 | 0.46 | <0.46 | <0.47 | NA | NA | 0.5 J | <0.59 J |
| Thallium | mg/kg | NE | 140 | 10,000 | NE | <1.11 D | <1.10 D | <1.14 D | <1.15 D | NA | NA | NA | NA |
| Zinc | mg/kg | NE | 10,000 | 10,000 | NE | 29.1 | 30.8 | 24.8 J | 43.6 J | NA | NA | NA | NA |
| Reactive Cyanide | mg/kg | NE | NE | NE | NE | NA | NA | NA | NA | NA | NA | <2.0 | <2.0 |
| Reactive Sulfide | mg/kg | NE | NE | NE | NE | NA | NA | NA | NA | NA | NA | <2.0 | <2.0 |
| EPA Method 1311 TCLP Metals | | | | | | | | | | | | | |
| Lead | mg/L | NE | NE | NE | 5 | NA | NA | NA | NA | <0.050 | <0.050 | 0.154 | 0.374 |
| EPA Method 8082A POLYCHLORINATED BIPHENYLS | | | | | | | | | | | | | |
| Aroclor 1016 | mg/kg | 10 | 10 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.0613 | <0.0713 |
| Aroclor 1221 | mg/kg | 10 | 10 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.0613 | <0.0713 |
| Aroclor 1232 | mg/kg | 10 | 10 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.0613 | <0.0713 |
| Aroclor 1242 | mg/kg | 10 | 10 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.0613 | <0.0713 |
| Aroclor 1248 | mg/kg | 10 | 10 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.0613 | <0.0713 |
| Aroclor 1254 | mg/kg | 10 | 10 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.0613 | 0.105 |
| Aroclor 1260 | mg/kg | 10 | 10 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.0613 | <0.0713 |
| Aroclor 1262 | mg/kg | 10 | 10 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.0613 | <0.0713 |
| Aroclor 1268 | mg/kg | 10 | 10 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.0613 | <0.0713 |

Notes

NE = Not Established

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Gray shaded cells and bolded text indicates the concentration exceeds the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).

Blue shaded cells indicate that the detection limit exceeds the RIDEM Method 1 Criteria.

Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

A concentration shown with **red and bolded text** exceeds the RCRA Hazardous Waste Criteria.

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

BD-051914 is a blind duplicate of GZ-313D S-3

BD-052814 is a blind duplicate for GZ-320D S-3

BD-070114 is a blind duplicate for SS-306 0-1ft.

BD-052014 is a blind duplicate of GZ-324 S-2

TABLE 8
SUMMARY OF SOIL QA/QC SVOCs, TPH, PCBs, INORGANICS ANALYTICAL RESULTS

642 Allens Avenue
Providence, Rhode Island

| | Units | RIDEM GB Leachability Criteria | RIDEM Industrial/Commercial DEC | RIDEM UCL | RCRA Hazardous Waste Criteria | GZ-313D S-3 1405553-02 05/19/2014 | BD-051914 1405553-03 05/19/2014 | GZ-320D S-3 1406074-03 05/28/2014 | BD-052814 1406074-04 05/28/2014 | SS-306 0-1ft 1407013-10 07/01/2014 | BD 070114 1407013-11 07/01/2014 | GZ-324 S-2 1405486-04 05/20/2014 | BD-052014 1405486-05 05/20/2014 |
|--|-------|--------------------------------|---------------------------------|-----------|-------------------------------|-----------------------------------|---------------------------------|-----------------------------------|---------------------------------|------------------------------------|---------------------------------|----------------------------------|---------------------------------|
| EPA Method 8270 SEMI VOLATILE ORGANIC COMPOUNDS (SVOCs) | | | | | | | | | | | | | |
| 1,1-Biphenyl | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | 0.565 | <0.488 |
| 1,2,4-Trichlorobenzene | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 1,2-Dichlorobenzene | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 1,3-Dichlorobenzene | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 1,4-Dichlorobenzene | mg/kg | NE | 240 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2,3,4,6-Tetrachlorophenol | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <2.06 | <2.45 |
| 2,4,5-Trichlorophenol | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2,4,6-Trichlorophenol | mg/kg | NE | 520 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2,4-Dichlorophenol | mg/kg | NE | 6,100 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2,4-Dimethylphenol | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2,4-Dinitrophenol | mg/kg | NE | 4,100 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <2.06 | <2.45 |
| 2,4-Dinitrotoluene | mg/kg | NE | 8.4 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2,6-Dinitrotoluene | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2-Chloronaphthalene | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2-Chlorophenol | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2-Methylnaphthalene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | <0.393 | <0.397 | NA | NA | 8.33 D | 6.05 |
| 2-Methylphenol | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2-Nitroaniline | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 2-Nitrophenol | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 3,3'-Dichlorobenzidine | mg/kg | NE | 13 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.822 | <0.978 |
| 3+4-Methylphenol | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.822 | <0.978 |
| 3-Nitroaniline | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 4,6-Dinitro-2-Methylphenol | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <2.06 | <2.45 |
| 4-Bromophenyl-phenylether | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 4-Chloro-3-Methylphenol | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 4-Chloroaniline | mg/kg | NE | 8,200 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.822 | <0.978 |
| 4-Chloro-phenyl-phenyl ether | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 4-Nitroaniline | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| 4-Nitrophenol | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <2.06 | <2.45 |
| Acenaphthene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | <0.393 | <0.397 | NA | NA | 0.447 | <0.488 |
| Acenaphthylene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | <0.393 | <0.397 | NA | NA | 2.63 | 4.17 |
| Acetophenone | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.822 | <0.978 |
| Aniline | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.822 | <0.978 |
| Anthracene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | <0.393 | <0.397 | NA | NA | 0.965 | 0.845 |
| Azobenzene | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |

Notes

NE = Not Established

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Gray shaded cells and bolded text indicates the concentration exceeds the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).

Blue shaded cells indicate that the detection limit exceeds the RIDEM Method 1 Criteria.

Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.

A concentration with a bold border exceeds the Upper Concentration Limit (UCL).

A concentration shown with **red and bolded text** exceeds the RCRA Hazardous Waste Criteria.

J modifier - Estimated Concentration

D modifier - Analyte concentration obtained from dilution

B modifier - Analyte present in method blank

BD-051914 is a blind duplicate of GZ-313D S-3

BD-052814 is a blind duplicate for GZ-320D S-3

BD-070114 is a blind duplicate for SS-306 0-1ft.

BD-052014 is a blind duplicate of GZ-324 S-2

**TABLE 8
SUMMARY OF SOIL QA/QC SVOCs, TPH, PCBs, INORGANICS ANALYTICAL RESULTS**

642 Allens Avenue
Providence, Rhode Island

| | Units | RIDEM GB Leachability Criteria | RIDEM Industrial/Commercial DEC | RIDEM UCL | RCRA Hazardous Waste Criteria | GZ-313D S-3 1405553-02 05/19/2014 | BD-051914 1405553-03 05/19/2014 | GZ-320D S-3 1406074-03 05/28/2014 | BD-052814 1406074-04 05/28/2014 | SS-306 0-1ft 1407013-10 07/01/2014 | BD 070114 1407013-11 07/01/2014 | GZ-324 S-2 1405486-04 05/20/2014 | BD-052014 1405486-05 05/20/2014 |
|--|-------|--------------------------------|---------------------------------|-----------|-------------------------------|---|---------------------------------------|---|---------------------------------------|--|---------------------------------------|--|---------------------------------------|
| EPA Method 8270 SEMI VOLATILE ORGANIC COMPOUNDS (SVOCs) | | | | | | | | | | | | | |
| Benzo [a] Anthracene | mg/kg | NE | 7.8 | 10,000 | NE | <0.383 | <0.380 | 0.488 | 0.513 | NA | NA | 1.94 | 2.33 |
| Benzo [a] Pyrene | mg/kg | NE | 0.8 | 10,000 | NE | <0.192 | <0.191 | 0.387 | 0.397 | NA | NA | 1 | 0.874 |
| Benzo [b] Fluoranthene | mg/kg | NE | 7.8 | 10,000 | NE | <0.383 | <0.380 | 0.487 | 0.578 | NA | NA | 3.35 | 5.34 |
| Benzo [g,h,i] Perylene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | <0.393 | <0.397 | NA | NA | 0.425 | 0.6 |
| Benzo [k] Fluoranthene | mg/kg | NE | 78 | 10,000 | NE | <0.383 | <0.380 | <0.393 | <0.397 | NA | NA | 1.02 | 2.03 |
| Benzoic Acid | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <2.06 | <2.45 |
| Benzyl Alcohol | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| bis(2-Chloroethoxy)methane | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| bis(2-Chloroethyl)ether | mg/kg | NE | 5.2 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| bis(2-chloroisopropyl)Ether | mg/kg | NE | 82 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| bis(2-Ethylhexyl)phthalate | mg/kg | NE | 410 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Butylbenzylphthalate | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Carbazole | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | 0.518 | <0.488 |
| Chrysene | mg/kg | NE | 780 | 10,000 | NE | <0.192 | <0.191 | 0.516 | 0.55 | NA | NA | 2.88 | 4.07 |
| Dibenzo [a,h] Anthracene | mg/kg | NE | 0.8 | 10,000 | NE | <0.192 | <0.191 | <0.197 | <0.199 | NA | NA | 0.244 | 0.354 |
| Dibenzofuran | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | 0.528 | <0.488 |
| Diethylphthalate | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Dimethylphthalate | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Di-n-butylphthalate | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Di-n-octylphthalate | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Fluoranthene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | 0.925 | 1.04 | NA | NA | 2.76 | 2.16 |
| Fluorene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | <0.393 | <0.397 | NA | NA | 0.764 | <0.488 |
| Hexachlorobenzene | mg/kg | NE | 3.6 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.206 | <0.245 |
| Hexachlorobutadiene | mg/kg | NE | 73 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Hexachlorocyclopentadiene | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <2.06 | <2.45 |
| Hexachloroethane | mg/kg | NE | 410 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Indeno [1,2,3-cd] Pyrene | mg/kg | NE | 7.8 | 10,000 | NE | <0.383 | <0.380 | <0.393 | <0.397 | NA | NA | 0.528 | 0.826 |
| Isophorone | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Naphthalene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | 0.568 | 0.717 | NA | NA | 55.7 | 24.4 |
| Nitrobenzene | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| N-Nitrosodimethylamine | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| N-Nitroso-Di-n-Propylamine | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| N-nitrosodiphenylamine | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Pentachlorophenol | mg/kg | NE | 48 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <2.06 | <2.45 |
| Phenanthrene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | 0.686 | 0.874 | NA | NA | 2.5 | 0.962 |
| Phenol | mg/kg | NE | 10,000 | 10,000 | NE | NA | NA | NA | NA | NA | NA | <0.410 | <0.488 |
| Pyrene | mg/kg | NE | 10,000 | 10,000 | NE | <0.383 | <0.380 | 0.728 | 0.783 | NA | NA | 2.23 | 2.72 |
| Pyridine | mg/kg | NE | NE | 10,000 | NE | NA | NA | NA | NA | NA | NA | <2.06 | <2.45 |

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**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | August 2011 | | | | | | | February 2012 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.33 | - | 13.33 | 1.94 | NP | NP | 1.94 | - | 10.75 | - | 13.45 | 1.52 | NP | NP | 1.52 |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | - | 10.55 | - | 17.2 | 0.11 | NP | NP | 0.11 | - | 11.2 | - | 17.27 | -0.54 | NP | NP | -0.54 |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | - | 9.09 | - | 10.95 | 3.86 | NP | NP | 3.86 | - | 8.85 | - | 11.07 | 4.10 | NP | NP | 4.10 |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | 10.72 | 13.66 | - | 13.75 | 0.06 | 2.94 | NP | 2.56 | 10.95 | 13.74 | - | 13.94 | -0.02 | 2.79 | NP | 2.35 |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 9.52 | - | 13 | 3.40 | NP | NP | 3.40 | - | 9.48 | - | 13.05 | 3.44 | NP | NP | 3.44 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 12 | - | 17.65 | 3.38 | NP | NP | 3.38 | - | 12.02 | - | 17.7 | 3.36 | NP | NP | 3.36 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | trace | 11.31 | - | 14.79 | 2.14 | trace | NP | 2.14 | trace | 11.73 | - | 14.79 | 1.72 | trace | NP | 1.72 |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5-15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | - | 9.64 | - | 15.98 | 2.52 | NP | NP | 2.52 | - | 9.75 | - | 16.05 | 2.41 | NP | NP | 2.41 |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | - | 7.74 | - | 13.12 | 1.93 | NP | NP | 1.93 | - | 8.37 | - | 13.26 | 1.30 | NP | NP | 1.30 |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | - | 11.59 | - | 13.55 | 3.50 | NP | NP | 3.50 | - | 8.91 | - | 13.61 | 6.18 | NP | NP | 6.18 |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 10.37 | 5 - 15 | NP | NP | - | 11.82 | - | 14.05 | -1.31 | NP | NP | -1.31 | - | 12.06 | - | 14.11 | -1.55 | NP | NP | -1.55 |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | - | 8.19 | - | 16.8 | 1.17 | NP | NP | 1.17 | - | 8.78 | - | 16.64 | 0.58 | NP | NP | 0.58 |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | - | 9.65 | - | 14.6 | 4.21 | NP | NP | 4.21 | - | 9.45 | - | 14.7 | 4.41 | NP | NP | 4.41 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | - | 10.37 | - | 16.75 | 1.87 | NP | NP | 1.87 | trace | 10.78 | - | 16.9 | 1.46 | trace | NP | 1.46 |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | - | 10.47 | - | 15.90 | 2.25 | NP | NP | 2.25 | - | 10.73 | - | 15.86 | 1.99 | NP | NP | 1.99 |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 8.91 | - | 17 | 6.07 | NP | NP | 6.07 | - | 8.85 | - | 17.17 | 6.13 | NP | NP | 6.13 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 12.25 | - | 17.9 | 2.05 | NP | NP | 2.05 | - | 12.35 | - | 18 | 1.95 | NP | NP | 1.95 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | 11.27 | 11.3 | - | 12.35 | 1.78 | 0.03 | NP | 1.81 | 11.67 | 11.68 | - | 12.45 | 1.40 | 0.01 | NP | 1.41 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 11.9 | - | 13.8 | 2.42 | NP | NP | 2.42 | - | 12.3 | - | 13.8 | 2.02 | NP | NP | 2.02 |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | - | 6.71 | - | 8.46 | NS | NP | NP | NS | - | 5.41 | - | 8.6 | NS | NP | NP | NS |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | - | 8.24 | - | 11.07 | NS | NP | NP | NS | - | 8.35 | - | 11.2 | NS | NP | NP | NS |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 13.25 | - | 16.8 | 2.78 | NP | NP | 2.78 | - | 13.46 | - | 16.81 | 2.57 | NP | NP | 2.57 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 13.02 | - | 14.95 | 2.76 | NP | NP | 2.76 | - | 13.25 | - | 15.04 | 2.53 | NP | NP | 2.53 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 13.31 | - | 17 | 2.83 | NP | NP | 2.83 | - | 13.52 | - | 17.06 | 2.62 | NP | NP | 2.62 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 14.77 | - | 17.09 | 2.75 | NP | NP | 2.75 | - | 14.99 | - | 17.12 | 2.53 | NP | NP | 2.53 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | - | 9.4 | - | 17.3 | 3.43 | NP | NP | 3.43 | - | 9.19 | - | 17.41 | 3.64 | NP | NP | 3.64 |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | - | 7.65 | - | 17.75 | 3.96 | NP | NP | 3.96 | - | 6.88 | - | 17.65 | 4.73 | NP | NP | 4.73 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes
Well is located in the Natural Gas Regulator portion of the Property
Well is located at the LNG Facility
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD88
NP - Indicates No Product observed.
NS - Not Surveyed
Blanks indicate no measurement collected on that particular day.
Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2012 | | | | | | | February 2013 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.44 | - | 13.45 | 1.83 | NP | NP | 1.83 | - | 10.59 | - | 13.55 | 1.68 | NP | NP | 1.68 |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | - | 10.65 | - | 17.2 | 0.01 | NP | NP | 0.01 | - | 11.21 | - | 17.26 | -0.55 | NP | NP | -0.55 |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | - | 9.1 | - | 11.07 | 3.85 | NP | NP | 3.85 | - | 8.83 | - | 14.35 | 4.12 | NP | NP | 4.12 |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | 11.17 | 12.82 | - | 14.35 | 0.90 | 1.65 | NP | 2.30 | 11.41 | 12.85 | - | 14.35 | 0.87 | 1.44 | NP | 2.10 |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 9.69 | - | 13.05 | 3.23 | NP | NP | 3.23 | - | 9.77 | - | 13.2 | 3.15 | NP | NP | 3.15 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 12.08 | - | 17.7 | 3.30 | NP | NP | 3.30 | - | 12.28 | - | 17.75 | 3.10 | NP | NP | 3.10 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | 11.50 | 11.61 | - | 14.45 | 1.84 | 0.11 | NP | 1.84 | trace | 11.98 | - | 14.45 | 1.47 | trace | NP | 1.47 |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5-15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | - | 10.75 | - | 16.01 | 1.41 | NP | NP | 1.41 | - | 9.98 | - | 12.9 | 2.18 | NP | NP | 2.18 |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | - | 8.08 | - | 13.2 | 1.59 | NP | NP | 1.59 | - | 8.51 | - | 13.3 | 1.16 | NP | NP | 1.16 |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | - | 7.1 | - | 13.55 | 7.99 | NP | NP | 7.99 | - | 6.75 | - | 13.55 | 8.34 | NP | NP | 8.34 |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | - | 10.24 | - | 14.1 | 0.27 | NP | NP | 0.27 | - | 11.62 | - | 14.07 | -1.11 | NP | NP | -1.11 |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | - | 8.48 | - | 16.7 | 0.88 | NP | NP | 0.88 | - | 9.05 | - | 16.7 | 0.31 | NP | NP | 0.31 |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | - | 9.85 | - | 14.65 | 4.01 | NP | NP | 4.01 | - | 9.86 | - | 14.75 | 4.00 | NP | NP | 4.00 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | trace | 10.47 | - | 16.8 | 1.77 | trace | NP | 1.77 | trace | 10.85 | - | 16.8 | 1.39 | trace | NP | 1.39 |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | - | 10.5 | - | 15.84 | 2.22 | NP | NP | 2.22 | - | 10.71 | - | 15.85 | 2.01 | NP | NP | 2.01 |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 8.91 | - | 17.05 | 6.07 | NP | NP | 6.07 | - | 9.12 | - | 17.2 | 5.86 | NP | NP | 5.86 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 12.31 | - | 17.92 | 1.99 | NP | NP | 1.99 | - | 12.71 | - | 17.9 | 1.59 | NP | NP | 1.59 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | trace | 11.4 | - | 12.4 | 1.68 | trace | NP | 1.68 | trace | 11.77 | - | 12.5 | 1.31 | trace | NP | 1.31 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 12.08 | - | 13.8 | 2.24 | NP | NP | 2.24 | - | 12.4 | - | 13.8 | 1.92 | NP | NP | 1.92 |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | - | 6.59 | - | 8.46 | NS | NP | NP | NS | - | 5.27 | - | 8.55 | NS | NP | NP | NS |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | - | 8.18 | - | 11.1 | NS | NP | NP | NS | - | 8.39 | - | 11.2 | NS | NP | NP | NS |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 13.36 | - | 16.8 | 2.67 | NP | NP | 2.67 | - | 13.68 | - | 16.85 | 2.35 | NP | NP | 2.35 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 13.14 | - | 15 | 2.64 | NP | NP | 2.64 | - | 13.44 | - | 15.05 | 2.34 | NP | NP | 2.34 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 13.44 | - | 17.05 | 2.70 | NP | NP | 2.70 | - | 13.74 | - | 17.05 | 2.40 | NP | NP | 2.40 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 14.86 | - | 17.1 | 2.66 | NP | NP | 2.66 | - | 15.16 | - | 17.15 | 2.36 | NP | NP | 2.36 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | 7.7 | - | 20.05 | 1.83 | NP | NP | 1.83 | - | 8.98 | - | 20.10 | 0.55 | NP | NP | 0.55 |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | - | 9.49 | - | 17.43 | 3.34 | NP | NP | 3.34 | - | 9.62 | - | 17.42 | 3.21 | NP | NP | 3.21 |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | - | 7.72 | - | 17.68 | 3.89 | NP | NP | 3.89 | - | 7.22 | - | 17.65 | 4.39 | NP | NP | 4.39 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | November 2013 | | | | | | | June 2014 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|--|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.77 | - | 13.45 | 1.50 | NP | NP | 1.50 | - | 10.39 | - | 17.4 | 1.88 | NP | NP | 1.88 |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | - | 10.61 | - | 17.2 | 0.05 | NP | NP | 0.05 | Well covered with gravel - can not gauge | | | | | | | |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | - | 10.27 | - | 11.03 | 2.68 | NP | NP | 2.68 | - | 9.09 | - | 14.2 | 3.86 | NP | NP | 3.86 |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | 12.26 | 14.17 | - | 14.35 | -0.45 | 1.91 | NP | 1.17 | 11.04 | 11.95 | - | 14.63 | 1.77 | 0.91 | NP | 2.54 |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 10.3 | - | 13.05 | 2.62 | NP | NP | 2.62 | - | 9.75 | - | 13 | 3.17 | NP | NP | 3.17 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 12.46 | - | 17.48 | 2.92 | NP | NP | 2.92 | - | 11.84 | - | 17.8 | 3.54 | NP | NP | 3.54 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | - | 11.79 | - | 14.35 | 1.66 | NP | NP | 1.66 | 11.38 | 11.55 | - | 14.95 | 1.90 | 0.17 | NP | 2.04 |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5-15 | NP | NP | - | | | | | | | | | | | | | | | |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | - | 10.39 | - | 12.8 | 1.77 | NP | NP | 1.77 | - | 9.16 | - | 12.98 | 3.00 | NP | NP | 3.00 |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | - | 8.11 | - | 13.2 | 1.56 | NP | NP | 1.56 | - | 7.75 | - | 13.32 | 1.92 | NP | NP | 1.92 |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | - | 7.01 | - | 12.81 | 8.08 | NP | NP | 8.08 | - | 10.13 | - | 13.1 | 4.96 | NP | NP | 4.96 |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | - | 10.28 | - | 11.8 | 0.23 | NP | NP | 0.23 | - | 12.15 | - | 13.16 | -1.64 | NP | NP | -1.64 |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | - | 9.25 | - | 16.5 | 0.11 | NP | NP | 0.11 | - | 8.7 | - | 17.65 | 0.66 | NP | NP | 0.66 |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | - | 10.8 | - | 14.64 | 3.06 | NP | NP | 3.06 | - | 9.42 | - | 14.75 | 4.44 | NP | NP | 4.44 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | - | 10.7 | - | 16.85 | 1.54 | NP | NP | 1.54 | - | 10.4 | - | 16.92 | 1.84 | NP | NP | 1.84 |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | - | 10.9 | - | 15.86 | 1.82 | NP | NP | 1.82 | - | 10.45 | - | 15.95 | 2.27 | NP | NP | 2.27 |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 9.26 | - | 16.88 | 5.72 | NP | NP | 5.72 | - | 8.52 | - | 17.54 | 6.46 | NP | NP | 6.46 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 12.8 | - | 17.92 | 1.50 | NP | NP | 1.50 | - | 11.98 | - | 17.9 | 2.32 | NP | NP | 2.32 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | 11.60 | 11.61 | - | 12.4 | 1.47 | 0.01 | NP | 1.48 | Trace | 11.33 | - | 12.56 | 1.75 | NP | NP | 1.75 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 12.25 | - | 13.7 | 2.07 | NP | NP | 2.07 | - | 12.59 | - | 14.5 | 1.73 | NP | NP | 1.73 |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | - | 7.35 | - | 8.45 | NS | NP | NP | NS | - | 4.94 | - | 8.7 | NS | NP | NP | NS |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | - | 8.68 | - | 11.1 | NS | NP | NP | NS | - | 7.9 | - | 11.32 | NS | NP | NP | NS |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 13.94 | - | 16.8 | 2.09 | NP | NP | 2.09 | - | 13.33 | - | 16.98 | 2.70 | NP | NP | 2.70 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 13.66 | - | 15 | 2.12 | NP | NP | 2.12 | - | 13.1 | - | 15.15 | 2.68 | NP | NP | 2.68 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 14.01 | - | 17.03 | 2.13 | NP | NP | 2.13 | - | 13.35 | - | 17.12 | 2.79 | NP | NP | 2.79 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 15.45 | - | 17.1 | 2.07 | NP | NP | 2.07 | - | 14.81 | - | 17.2 | 2.71 | NP | NP | 2.71 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | - | | | | | | | | | | | | | | | |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | 8.1 | - | 20.08 | 1.43 | NP | NP | 1.43 | - | 7.79 | - | 20.08 | 1.74 | NP | NP | 1.74 |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | - | 10.21 | - | 17.53 | 2.62 | NP | NP | 2.62 | - | 9.27 | - | 17.44 | 3.56 | NP | NP | 3.56 |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | - | 8.67 | - | 17.65 | 2.94 | NP | NP | 2.94 | - | 7.19 | - | 17.72 | 4.42 | NP | NP | 4.42 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | | | | | | | | | | | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | - | | | | | | | | - | 11.91 | - | 21.94 | 2.28 | NP | NP | 2.28 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | | | | | | | | - | 11.83 | - | 37.00 | 2.28 | NP | NP | 2.28 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | | | | | | | | - | 11.13 | - | 33.05 | 1.80 | NP | NP | 1.80 |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | | | | | | | | - | 9.86 | - | 32.23 | 5.04 | NP | NP | 5.04 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | | July 2, 2014 | | | | | | | July 23, 2014 | | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 10.06 | - | 14.45 | 7.27 | NP | NP | 7.27 | - | 10.1 | - | 14.44 | 7.23 | NP | NP | 7.23 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 10.05 | - | 29.6 | 7.28 | NP | NP | 7.28 | - | 10.12 | - | 29.6 | 7.21 | NP | NP | 7.21 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.59 | - | 14.56 | 7.08 | NP | NP | 7.08 | - | 9.66 | - | 14.55 | 7.01 | NP | NP | 7.01 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.48 | - | 29.44 | 7.11 | NP | NP | 7.11 | - | 9.57 | - | 29.41 | 7.02 | NP | NP | 7.02 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.3 | - | 15.45 | 5.52 | NP | NP | 5.52 | - | 6.25 | - | 15.45 | 5.57 | NP | NP | 5.57 |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 8.91 | Trace | 18.11 | 2.53 | NP | Trace | 2.53 | - | 9.49 | Trace | 17.91 | 1.95 | NP | Trace | 1.95 |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | RCA-13 | 11.94 | 11.61 | 10.51 | Standpipe | Shallow | 9/12/1994 | 13.97 | 4 - 14 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | RCA-14 | 13.09 | 12.75 | 11.06 | Standpipe | Shallow | 9/12/1994 | 13.61 | 5 - 15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | RCA-15 | NS | 14.06 | NS | Standpipe | Shallow | 12/8/1994 | 15.97 | 4 - 14 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | RCA-17 | NS | 13.44 | NS | Standpipe | Shallow | 12/9/1994 | 12.80 | 4 - 14 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.65 | - | 11.35 | 5.68 | NP | NP | 5.68 | - | 4.65 | - | 11.31 | 5.68 | NP | NP | 5.68 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | - | 6.27 | - | 10.2 | 5.69 | NP | NP | 5.69 | - | 6.15 | - | 10.13 | 5.81 | NP | NP | 5.81 |
| NG | VHB-6 | 12.91 | 12.93 | 10.25 | Standpipe | Shallow | 1/14/2002 | 9.77 | 2 - 12 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | VHB-7 | 14.30 | 13.73 | 11.29 | Standpipe | Shallow | 1/14/2002 | 12.66 | 2 - 12 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | VHB-10 | 19.45 | 19.10 | 15.88 | Standpipe | Shallow | 1/15/2002 | 14.77 | 5 - 15 | trace - 0.02 | NP | Trace | 12.41 | - | 18 | 6.69 | Trace | NP | 6.69 | - | 12.66 | - | 17.94 | 6.44 | NP | NP | 6.44 |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | VHB-21 | 13.80 | 13.65 | 11.09 | Standpipe | Shallow | 1/28/2003 | 15.94 | 6 - 16 | trace - 0.08 | NP | Trace | 9.07 | - | 18.5 | 4.58 | Trace | NP | 4.58 | 9.41 | 9.49 | - | 18.5 | 4.16 | 0.08 | NP | 4.22 |
| NG | VHB-22 | 13.32 | 13.02 | 11.21 | Standpipe | Shallow | 1/28/2003 | 15.49 | 6 - 16 | 0.01 - 0.04 | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | VHB-23 | 12.98 | 12.80 | 11.37 | Standpipe | Shallow | 1/29/2003 | 16.37 | 6 - 16 | trace - 0.05 | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | CHES RW-1 | 12.94 | 12.94 | 11.06 | Recovery Well | Shallow | 2002 | 9.42 | Unknown | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | CHES RW-2 | 14.27 | 14.27 | 11.09 | Recovery Well | Shallow | 2002 | 13.12 | Unknown | trace | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | CHES-RWA | NS | NS | NS | Recovery Well | Shallow | 2017 | 9.80 | Unknown | 0.30 - 0.89 | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | - | 5.54 | - | 9.35 | 4.13 | NP | NP | 4.13 | - | 5.42 | - | 9.3 | 4.25 | NP | NP | 4.25 |
| NG | VHB-8R | 14.85 | 14.06 | 12.60 | Standpipe | Shallow | 6/4/2014 | 12.29 | 2 - 12 | NP | NP | - | 7.06 | - | 13.74 | 7.00 | NP | NP | 7.00 | - | 7.41 | - | 14.00 | 6.65 | NP | NP | 6.65 |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.55 | - | 14.91 | 6.73 | NP | NP | 6.73 | - | 6.62 | - | 14.91 | 6.66 | NP | NP | 6.66 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.3 | - | 29.67 | 6.83 | NP | NP | 6.83 | - | 6.38 | - | 29.66 | 6.75 | NP | NP | 6.75 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.45 | - | 29.58 | 5.50 | NP | NP | 5.50 | - | 6.45 | - | 29.57 | 5.50 | NP | NP | 5.50 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 6.75 | - | 14.16 | 4.89 | NP | NP | 4.89 | - | 6.72 | - | 14.15 | 4.92 | NP | NP | 4.92 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 6.55 | - | 14.8 | 4.94 | NP | NP | 4.94 | - | 6.52 | - | 14.78 | 4.97 | NP | NP | 4.97 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | - | 4.86 | - | 14.01 | 5.32 | NP | NP | 5.32 | - | 4.85 | - | 13.98 | 5.33 | NP | NP | 5.33 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 2.58 | - | 11.41 | 6.38 | NP | NP | 6.38 | - | 2.46 | - | 11.36 | 6.50 | NP | NP | 6.50 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.11 | - | 29.9 | 5.72 | NP | NP | 5.72 | - | 4.02 | - | 29.9 | 5.81 | NP | NP | 5.81 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | - | 7.59 | - | 32.68 | 5.23 | NP | NP | 5.23 | - | 7.58 | - | 32.56 | 5.24 | NP | NP | 5.24 |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | - | 6.13 | - | 15 | 4.45 | NP | NP | 4.45 | - | 6.1 | - | 14.99 | 4.48 | NP | NP | 4.48 |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | - | 6.25 | - | 32.6 | 4.54 | NP | NP | 4.54 | - | 6.6 | - | 32.6 | 4.19 | NP | NP | 4.19 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 8.57 | - | 38.11 | 3.07 | NP | NP | 3.07 | - | 10.16 | - | 38.05 | 1.48 | NP | NP | 1.48 |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | - | 9.2 | - | 36.42 | 4.28 | NP | NP | 4.28 | - | 9.64 | - | 36.4 | 3.84 | NP | NP | 3.84 |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | - | 12.06 | - | 33.15 | 6.88 | NP | NP | 6.88 | - | 12.38 | - | 33.7 | 6.56 | NP | NP | 6.56 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-403 | 14.52 | 14.29 | 11.45 | Standpipe | Shallow | 11/2/2015 | 14.65 | 3 - 13 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-503S | 19.71 | 19.61 | 16.77 | Standpipe | Shallow | 9/15/2021 | 14.84 | 2 - 12 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-502S | 13.93 | 13.74 | 11.05 | Standpipe | Shallow | 9/14/2021 | 15.68 | 5 - 15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-501S | 15.11 | 14.92 | 12.22 | Standpipe | Shallow | 9/14/2021 | 16.12 | 3 - 13 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-500S | 19.95 | 19.75 | 16.80 | Standpipe | Shallow | 9/14/2021 | 16.83 | 5 - 15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

Notes
Well is located in the Natural Gas Regulator portion of the Property
Well is located at the LNG Facility
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD88
NP - Indicates No Product observed.
NS - Not Surveyed
Blanks indicate no measurement collected on that particular day.
Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.
Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2, 2014 | | | | | | | July 23, 2014 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.55 | - | 17.25 | 1.72 | NP | NP | 1.72 | - | 10.68 | - | 17.35 | 1.59 | NP | NP | 1.59 |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | | | | | | | | | - | 12.06 | - | 17.7 | 3.32 | NP | NP | 3.32 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5-15 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | | | | | | | | | | | | | | | | |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 8.66 | - | 17.55 | 6.32 | NP | NP | 6.32 | - | 8.89 | - | 17.54 | 6.09 | NP | NP | 6.09 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | | | | | | | | | | | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | | | | | | | | | Trace | 11.51 | - | 12.56 | 1.57 | Trace | NP | 12.56 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | | | | | | | | | - | 10.68 | - | 17.35 | 3.64 | NP | NP | 3.64 |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | | | | | | | | | | | | | | | | |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | | | | | | | | | | | | | | | | |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | | | | | | | | | | | | | | | | |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | | | | | | | | | | | | | | | | |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | | | | | | | | | | | | | | | | |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | | | | | | | | | | | | | | | | |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | 10.24 | 10.26 | - | 14 | 3.92 | 0.02 | NP | 3.94 | Trace | 10.46 | - | 14.02 | 3.72 | Trace | NP | 3.72 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | - | 12.28 | - | 21.80 | 1.91 | NP | NP | 1.91 | - | 12.48 | - | 21.81 | 1.71 | NP | NP | 1.71 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 12.18 | - | 37.00 | 1.93 | NP | NP | 1.93 | - | 12.48 | - | 36.95 | 1.63 | NP | NP | 1.63 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.26 | - | 32.90 | 1.67 | NP | NP | 1.67 | - | 11.36 | - | 32.93 | 1.57 | NP | NP | 1.57 |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.91 | - | 32.20 | 4.99 | NP | NP | 4.99 | - | 10.15 | - | 32.25 | 4.75 | NP | NP | 4.75 |

Notes
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 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

Table with 27 columns: Site Area, Well ID, Surveyed Elevations (Top of Casing, Top of PVC, Grade), Well Installation Details (Type, Depth, Date, Measured, Screened), Range of LNAPL, Range of DNAPL, October 2014 (Depth to LNAPL, Water, DNAPL, Total Well, GW Elevation, LNAPL Thickness, DNAPL Thickness, Corrected Groundwater), April 2015 (Depth to LNAPL, Water, DNAPL, Total Well, GW Elevation, LNAPL Thickness, DNAPL Thickness, Corrected Groundwater).

Notes

- Well is located in the Natural Gas Regulator portion of the Property
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Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | October 2014 | | | | | | | April 2015 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.67 | - | 17.42 | 1.60 | NP | NP | 1.60 | - | 10.76 | - | 17.28 | 1.51 | NP | NP | 1.51 |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | - | 11.90 | - | 16.23 | -1.24 | NP | NP | -1.24 | - | 11.04 | - | 16.20 | -0.38 | NP | NP | -0.38 |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | - | 9.92 | - | 14.22 | 3.03 | NP | NP | 3.03 | - | 8.71 | - | 14 | 4.24 | NP | NP | 4.24 |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 10 | - | 13.29 | 2.92 | NP | NP | 2.92 | - | 9.62 | - | 13 | 3.30 | NP | NP | 3.30 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 12.28 | - | 17.81 | 3.10 | NP | NP | 3.10 | - | 11.49 | - | 17.68 | 3.89 | NP | NP | 3.89 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | 11.68 | 11.76 | - | 14.95 | 1.69 | 0.08 | NP | 1.76 | 11.53 | 11.55 | - | 14.8 | 1.90 | 0.02 | NP | 1.92 |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5 - 15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | - | 10.3 | - | 13.05 | 1.86 | NP | NP | 1.86 | - | 9.3 | - | 12.85 | 2.86 | NP | NP | 2.86 |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | - | 8.31 | - | 13.38 | 1.36 | NP | NP | 1.36 | - | 10.5 | - | 15.67 | -0.83 | NP | NP | -0.83 |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | - | 12.32 | - | 13.21 | 2.77 | NP | NP | 2.77 | - | 6.42 | - | 12.95 | 8.67 | NP | NP | 8.67 |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | - | 11.94 | - | 13.15 | -1.43 | NP | NP | -1.43 | - | 11.88 | - | 13.07 | -1.37 | NP | NP | -1.37 |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | - | 9.02 | - | 16.33 | 0.34 | NP | NP | 0.34 | - | 8.95 | - | 16.4 | 0.41 | NP | NP | 0.41 |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | - | 10.01 | - | 14.84 | 3.85 | NP | NP | 3.85 | - | 9.23 | - | 14.6 | 4.63 | NP | NP | 4.63 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | - | 10.7 | - | 16.96 | 1.54 | NP | NP | 1.54 | 10.75 | 10.79 | - | 16.8 | 1.45 | 0.04 | NP | 1.48 |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | - | 10.7 | - | 15.88 | 2.02 | NP | NP | 2.02 | - | 10.51 | - | 15.75 | 2.21 | NP | NP | 2.21 |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 9.15 | - | 17.6 | 5.83 | NP | NP | 5.83 | - | 8.18 | - | 17.75 | 6.80 | NP | NP | 6.80 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 11.57 | - | 12.67 | 2.73 | NP | NP | 2.73 | trace | 12.38 | - | 17.85 | 1.92 | trace | NP | 1.92 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Trace | 10.71 | - | 12.55 | 2.37 | Trace | NP | 2.37 | trace | 11.62 | - | 12.4 | 1.46 | trace | NP | 1.46 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 12.8 | - | 14.4 | 1.52 | NP | NP | 1.52 | 12.82 | 12.83 | - | 14.1 | 1.49 | 0.01 | NP | 1.50 |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | - | 5.4 | - | 8.82 | NS | NP | NP | NS | - | 4.05 | - | 8.45 | NS | NP | NP | NS |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | Trace | 8.19 | - | 11.3 | NS | Trace | NP | NS | - | 7.9 | - | 11.1 | NS | NP | NP | NS |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 13.49 | - | 16.98 | 2.54 | NP | NP | 2.54 | - | 13.08 | - | 16.3 | 2.95 | NP | NP | 2.95 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 13.31 | - | 18.22 | 2.47 | NP | NP | 2.47 | - | 12.89 | - | 15 | 2.89 | NP | NP | 2.89 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 13.38 | - | 17.08 | 2.76 | NP | NP | 2.76 | - | 13.16 | - | 17 | 2.98 | NP | NP | 2.98 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 14.94 | - | 17.22 | 2.58 | NP | NP | 2.58 | - | 14.61 | - | 17 | 2.91 | NP | NP | 2.91 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | - | - | - | - | - | - | - | - | 9.54 | - | 20.23 | 3.56 | NP | NP | 3.56 | |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | 9.89 | - | 20.17 | -0.36 | NP | NP | -0.36 | - | 9.24 | - | 20.10 | 0.29 | NP | NP | 0.29 |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | - | 9.52 | - | 17.49 | 3.31 | NP | NP | 3.31 | - | 8.54 | - | 17.3 | 4.29 | NP | NP | 4.29 |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | - | 8.05 | - | 17.62 | 3.56 | NP | NP | 3.56 | - | 6.43 | - | 17.7 | 5.18 | NP | NP | 5.18 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | 10.67 | 10.68 | - | 14 | 3.50 | 0.01 | NP | 3.51 | trace | 9.64 | - | 13.9 | 4.54 | trace | NP | 4.54 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | - | 12.54 | - | 21.76 | 1.65 | NP | NP | 1.65 | - | 12.3 | - | 21.75 | 1.89 | NP | NP | 1.89 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 12.43 | - | 36.93 | 1.68 | NP | NP | 1.68 | - | 12.2 | - | 37.00 | 1.91 | NP | NP | 1.91 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.39 | - | 33.07 | 1.54 | NP | NP | 1.54 | - | 11.46 | - | 32.90 | 1.47 | NP | NP | 1.47 |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 10.38 | - | 32.30 | 4.52 | NP | NP | 4.52 | - | 9.58 | - | 32.20 | 5.32 | NP | NP | 5.32 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | October 2015 | | | | | | | May 2016 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.65 | - | 17.32 | 1.62 | NP | NP | 1.62 | - | 10.8 | - | 17.32 | 1.47 | NP | NP | 1.47 |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | - | 10.93 | - | 19.56 | -0.03 | NP | NP | -0.03 | - | 10.32 | - | 15.62 | 0.34 | NP | NP | 0.34 |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | - | 10.18 | - | 14.28 | 2.77 | NP | NP | 2.77 | - | 9.17 | - | 14 | 3.78 | NP | NP | 3.78 |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 10.08 | - | 13.29 | 2.84 | NP | NP | 2.84 | - | 9.62 | - | 12.9 | 3.30 | NP | NP | 3.30 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 12.22 | - | 17.7 | 3.16 | NP | NP | 3.16 | - | 9.78 | - | 17.65 | 5.60 | NP | NP | 5.60 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | 11.43 | 11.53 | - | 12.62 | 1.92 | 0.10 | NP | 2.01 | 11.52 | 11.53 | - | 12.31 | 1.92 | 0.01 | NP | 1.93 |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5 - 15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | - | 9.93 | - | 13.12 | 2.23 | NP | NP | 2.23 | - | 9.69 | - | 12.84 | 2.47 | NP | NP | 2.47 |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | - | 7.76 | - | 13.49 | 1.91 | NP | NP | 1.91 | - | 8 | - | 13.19 | 1.67 | NP | NP | 1.67 |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | - | 12.78 | - | 13.17 | 2.31 | NP | NP | 2.31 | - | 12.18 | - | 12.9 | 2.91 | NP | NP | 2.91 |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | - | 10 | - | 13.15 | 0.51 | NP | NP | 0.51 | - | 10.71 | - | 12.92 | -0.20 | NP | NP | -0.20 |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | - | 8.82 | - | 16.71 | 0.54 | NP | NP | 0.54 | - | 8.95 | - | 16.5 | 0.41 | NP | NP | 0.41 |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | - | 10.45 | - | 14.82 | 3.41 | NP | NP | 3.41 | - | 9.65 | - | 14.55 | 4.21 | NP | NP | 4.21 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | trace | 10.6 | - | 17.84 | 1.64 | trace | NP | 1.64 | 10.69 | 10.71 | - | 16.8 | 1.53 | 0.02 | NP | 1.55 |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | - | 10.49 | - | 15.87 | 2.23 | NP | NP | 2.23 | - | 10.58 | - | 15.85 | 2.14 | NP | NP | 2.14 |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 9.14 | - | 17.52 | 5.84 | NP | NP | 5.84 | - | 8.82 | - | 17.43 | 6.16 | NP | NP | 6.16 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 12.68 | - | 18 | 1.62 | NP | NP | 1.62 | - | 11.62 | - | 12.35 | 2.68 | NP | NP | 2.68 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | - | 11.35 | - | 12.44 | 1.73 | NP | NP | 1.73 | - | 11.05 | - | 0.00 | 2.03 | NP | NP | 2.03 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 12.69 | - | 14.34 | 1.63 | NP | NP | 1.63 | - | 12.77 | - | 14.1 | 1.55 | NP | NP | 1.55 |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | - | 5.99 | - | 8.27 | NS | NP | NP | NS | trace | 6.07 | - | 8.44 | NS | trace | NP | NS |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | - | 8.23 | - | 11.34 | NS | NP | NP | NS | trace | 8.34 | - | 11.1 | NS | trace | NP | NS |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 13.65 | - | 16.95 | 2.38 | NP | NP | 2.38 | - | 13.35 | - | 16.75 | 2.68 | NP | NP | 2.68 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 13.4 | - | 15.19 | 2.38 | NP | NP | 2.38 | - | 13.13 | - | 14.96 | 2.65 | NP | NP | 2.65 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 13.72 | - | 17.21 | 2.42 | NP | NP | 2.42 | - | 13.31 | - | 16.9 | 2.83 | NP | NP | 2.83 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 15.1 | - | 17.37 | 2.42 | NP | NP | 2.42 | - | 14.8 | - | 16.6 | 2.72 | NP | NP | 2.72 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | - | 9.85 | - | 20.21 | 3.25 | NP | NP | 3.25 | - | 9.77 | - | 20.22 | 3.33 | NP | NP | 3.33 |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | 7.8 | - | 20.28 | 1.73 | NP | NP | 1.73 | - | 8.80 | - | 20.00 | 0.73 | NP | NP | 0.73 |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | - | 9.85 | - | 17.45 | 2.98 | NP | NP | 2.98 | - | 9.30 | - | 18.65 | 3.53 | NP | NP | 3.53 |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | - | 8.48 | - | 17.73 | 3.13 | NP | NP | 3.13 | - | 7.41 | - | 18.59 | 4.20 | NP | NP | 4.20 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | trace | 11.14 | - | 14.14 | 3.04 | trace | NP | 3.04 | trace | 10.21 | - | 13.9 | 3.97 | trace | NP | 3.97 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | - | 12.52 | - | 21.89 | 1.67 | NP | NP | 1.67 | - | 11.98 | - | 21.75 | 2.21 | NP | NP | 2.21 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 12.47 | - | 37.00 | 1.64 | NP | NP | 1.64 | - | 11.92 | - | 36.85 | 2.19 | NP | NP | 2.19 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.32 | - | 32.93 | 1.61 | NP | NP | 1.61 | - | 11.45 | - | 32.8 | 1.48 | NP | NP | 1.48 |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 10.32 | - | 32.27 | 4.58 | NP | NP | 4.58 | - | 10.05 | - | 32.15 | 4.85 | NP | NP | 4.85 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

Table with 29 columns: Site Area, Well ID, Surveyed Elevations (Top of Casing, Top of PVC, Grade), Well Installation Details (Type, Depth, Date, Measured Well, Screened Interval, Range of LNAPL, Range of DNAPL), and monthly data for October 2016 and May 2017 (Depth to LNAPL, Depth to Water, Depth to DNAPL, Total Well Depth, GW Elevation, LNAPL/ DNAPL Thickness, Corrected Groundwater Elevation).

Notes

Well is located in the Natural Gas Regulator portion of the Property
Well is located at the LNG Facility
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD88
NP - Indicates No Product observed.
NS - Not Surveyed
Blanks indicate no measurement collected on that particular day.
Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.
Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | October 2016 | | | | | | | May 2017 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|-----------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | - | 9.45 | - | 15.69 | 1.21 | NP | NP | 1.21 | Could not locate well | | | | | | | |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 9.68 | - | 13.02 | 3.24 | NP | NP | 3.24 | - | 8.93 | - | 13.02 | 3.99 | NP | NP | 3.99 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 12.28 | - | 17.65 | 3.10 | NP | NP | 3.10 | - | 11.14 | - | 17.70 | 4.24 | NP | NP | 4.24 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5-15 | NP | NP | Monitoring Well Lost - Found in 2017 | | | | | | | Monitoring Well Lost - Found in 2017 | | | | | | | | |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | Unable to open | | | | | | | - | 12.50 | - | 12.93 | 2.59 | NP | NP | 2.59 | |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | - | 9.51 | - | 13.17 | 1.00 | NP | NP | 1.00 | - | 11.80 | - | 13.10 | -1.29 | NP | NP | -1.29 |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | - | 9.81 | - | 14.65 | 4.05 | NP | NP | 4.05 | - | 8.44 | - | 14.65 | 5.42 | NP | NP | 5.42 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 9.03 | - | 17.43 | 5.95 | NP | NP | 5.95 | - | 8.10 | - | 17.47 | 6.88 | NP | NP | 6.88 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 13.57 | - | 16.85 | 2.46 | NP | NP | 2.46 | - | 12.50 | - | 16.25 | 3.53 | NP | NP | 3.53 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 13.26 | - | 15.04 | 2.52 | NP | NP | 2.52 | - | 12.22 | - | 15.17 | 3.56 | NP | NP | 3.56 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 13.52 | - | 17 | 2.62 | NP | NP | 2.62 | - | 12.45 | - | 17.00 | 3.69 | NP | NP | 3.69 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 14.92 | - | 17.06 | 2.60 | NP | NP | 2.60 | - | 13.96 | - | 18.50 | 3.56 | NP | NP | 3.56 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | - | 9.79 | - | 20.15 | 3.31 | NP | NP | 3.31 | - | 9.08 | - | 20.07 | 4.02 | NP | NP | 4.02 |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | 7.95 | - | 20.12 | 1.58 | NP | NP | 1.58 | - | 9.50 | - | 20.24 | 0.03 | NP | NP | 0.03 |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 10.4 | - | 32.92 | 4.50 | NP | NP | 4.50 | - | 9.25 | - | 32.40 | 5.65 | NP | NP | 5.65 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | March 2018 | | | | | | | November 2018 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 8.88 | - | 14.45 | 8.45 | NP | NP | 8.45 | - | 8.01 | - | 14.43 | 9.32 | NP | NP | 9.32 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 8.99 | - | 29.80 | 8.34 | NP | NP | 8.34 | - | 8.19 | - | 29.59 | 9.14 | NP | NP | 9.14 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 8.90 | - | 14.77 | 7.77 | NP | NP | 7.77 | - | 7.98 | - | 14.55 | 8.69 | NP | NP | 8.69 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 8.84 | - | 29.79 | 7.75 | NP | NP | 7.75 | - | 7.95 | - | 29.37 | 8.64 | NP | NP | 8.64 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.15 | - | 14.91 | 6.67 | NP | NP | 6.67 | - | 4.52 | - | 15.41 | 7.30 | NP | NP | 7.30 |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-13 | 11.94 | 11.61 | 10.51 | Standpipe | Shallow | 9/12/1994 | 13.97 | 4 - 14 | NP | NP | Decommissioned October 2015 | | | | | | | Decommissioned October 2015 | | | | | | | | |
| NG | RCA-14 | 13.09 | 12.75 | 11.06 | Standpipe | Shallow | 9/12/1994 | 13.61 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-15 | NS | 14.06 | NS | Standpipe | Shallow | 12/8/1994 | 15.97 | 4 - 14 | NP | NP | - | 7.53 | - | 18.16 | 6.53 | NP | NP | 6.53 | - | 6.96 | - | 17.92 | 7.10 | NP | NP | 7.10 |
| NG | RCA-17 | NS | 13.44 | NS | Standpipe | Shallow | 12/9/1994 | 12.80 | 4 - 14 | NP | NP | - | 6.60 | - | 14.81 | 6.84 | NP | NP | 6.84 | - | 5.54 | - | 17.76 | 7.90 | NP | NP | 7.90 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 2.91 | - | 29.70 | 7.42 | NP | NP | 7.42 | - | 3.05 | - | 29.87 | 7.28 | NP | NP | 7.28 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-6 | 12.91 | 12.93 | 10.25 | Standpipe | Shallow | 1/14/2002 | 9.77 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-7 | 14.30 | 13.73 | 11.29 | Standpipe | Shallow | 1/14/2002 | 12.66 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-10 | 19.45 | 19.10 | 15.88 | Standpipe | Shallow | 1/15/2002 | 14.77 | 5 - 15 | trace - 0.02 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-21 | 13.80 | 13.65 | 11.09 | Standpipe | Shallow | 1/28/2003 | 15.94 | 6 - 16 | trace - 0.08 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-22 | 13.32 | 13.02 | 11.21 | Standpipe | Shallow | 1/28/2003 | 15.49 | 6 - 16 | 0.01 - 0.04 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-23 | 12.98 | 12.80 | 11.37 | Standpipe | Shallow | 1/29/2003 | 16.37 | 6 - 16 | trace - 0.05 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES RW-1 | 12.94 | 12.94 | 11.06 | Recovery Well | Shallow | 2002 | 9.42 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES RW-2 | 14.27 | 14.27 | 11.09 | Recovery Well | Shallow | 2002 | 13.12 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES-RWA | NS | NS | NS | Recovery Well | Shallow | 2017 | 9.80 | Unknown | 0.30 - 0.89 | NP | 6.36 | 7.25 | - | 9.55 | - | 0.89 | - | - | 5.48 | 5.78 | - | 9.51 | - | 0.30 | - | - |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-8R | 14.85 | 14.06 | 12.60 | Standpipe | Shallow | 6/4/2014 | 12.29 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 5.95 | - | 14.86 | 7.33 | NP | NP | 7.33 | - | 5.16 | - | 14.90 | 8.12 | NP | NP | 8.12 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 5.60 | - | 29.95 | 7.53 | NP | NP | 7.53 | - | 4.88 | - | 29.62 | 8.25 | NP | NP | 8.25 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.35 | - | 29.80 | 6.60 | NP | NP | 6.60 | - | 4.65 | - | 29.52 | 7.30 | NP | NP | 7.30 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.41 | - | 14.15 | 6.23 | NP | NP | 6.23 | - | 4.79 | - | 14.11 | 6.85 | NP | NP | 6.85 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.25 | - | 14.70 | 6.24 | NP | NP | 6.24 | - | 4.57 | - | 14.75 | 6.92 | NP | NP | 6.92 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | 3.23 | 3.59 | - | 14.02 | 6.59 | 0.36 | NP | 6.90 | 2.55 | 2.55 | - | 13.96 | 7.63 | trace | NP | 7.63 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | Unable to locate well under snow cover | | | | | | | - | 0.90 | - | 11.05 | 8.06 | NP | NP | 8.06 | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.21 | - | 30 | 6.62 | NP | NP | 6.62 | - | 2.88 | - | 29.87 | 6.95 | NP | NP | 6.95 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-403 | 14.52 | 14.29 | 11.45 | Standpipe | Shallow | 11/2/2015 | 14.65 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | Monitoring well found in Summer 2019 | | | | | | | Monitoring well found in Summer 2019 | | | | | | | | |
| NG | GZ-503S | 19.71 | 19.61 | 16.77 | Standpipe | Shallow | 9/15/2021 | 14.84 | 2 - 12 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-502S | 13.93 | 13.74 | 11.05 | Standpipe | Shallow | 9/14/2021 | 15.68 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-501S | 15.11 | 14.92 | 12.22 | Standpipe | Shallow | 9/14/2021 | 16.12 | 3 - 13 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-500S | 19.95 | 19.75 | 16.80 | Standpipe | Shallow | 9/14/2021 | 16.83 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | |

Notes
Well is located in the Natural Gas Regulator portion of the Property
Well is located at the LNG Facility
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD88
NP - Indicates No Product observed.
NS - Not Surveyed
Blanks indicate no measurement collected on that particular day.
Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.
Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | March 2018 | | | | | | | November 2018 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|--|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | - | 10.00 | - | 15.70 | 0.66 | NP | NP | 0.66 | - | 11.29 | - | 20.78 | -0.63 | NP | NP | -0.63 |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 8.66 | - | 12.72 | 4.26 | NP | NP | 4.26 | - | 8.35 | - | 12.98 | 4.57 | NP | NP | 4.57 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 10.80 | - | 17.71 | 4.58 | NP | NP | 4.58 | - | 10.59 | - | 17.61 | 4.79 | NP | NP | 4.79 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5-15 | NP | NP | - | 11.95 | - | 13.75 | 3.03 | NP | NP | - | - | 13.22 | - | 13.78 | 1.76 | NP | NP | - |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | - | 8.90 | - | 13.02 | 6.19 | NP | NP | 6.19 | - | 7.82 | - | 14.61 | 7.27 | NP | NP | 7.27 |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | - | 9.85 | - | 13.05 | 0.66 | NP | NP | 0.66 | Filled with sediment from construction | | | | | | | |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | - | 8.45 | - | 14.62 | 5.41 | NP | NP | 5.41 | - | 6.35 | - | 12.94 | 7.51 | NP | NP | 7.51 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 7.88 | - | 17.47 | 7.10 | NP | NP | 7.10 | - | 7.20 | - | 17.41 | 7.78 | NP | NP | 7.78 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 12.46 | - | 17.5 | 3.57 | NP | NP | 3.57 | - | 11.91 | - | 16.79 | 4.12 | NP | NP | 4.12 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 12.13 | - | 15.48 | 3.65 | NP | NP | 3.65 | - | 11.67 | - | 15.04 | 4.11 | NP | NP | 4.11 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 12.35 | - | 17.80 | 3.79 | NP | NP | 3.79 | - | 11.85 | - | 16.70 | 4.29 | NP | NP | 4.29 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 13.75 | - | 18.33 | 3.77 | NP | NP | 3.77 | - | 13.31 | - | 16.99 | 4.21 | NP | NP | 4.21 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | - | 9.00 | - | 20.00 | 4.10 | NP | NP | 4.10 | - | 8.36 | - | 20.12 | 4.74 | NP | NP | 4.74 |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | 7.75 | - | 20.80 | 1.78 | NP | NP | 1.78 | - | 10.30 | - | 20.78 | -0.77 | NP | NP | -0.77 |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.69 | - | 32.40 | 5.21 | NP | NP | 5.21 | - | 8.71 | - | 32.29 | 6.19 | NP | NP | 6.19 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2019 | | | | | | | November 2019 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 9.2 | - | 14.4 | 8.13 | NP | NP | 8.13 | - | 9.9 | - | 14.43 | 7.43 | NP | NP | 7.43 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.28 | - | 29.50 | 8.05 | NP | NP | 8.05 | - | 9.93 | - | 29.74 | 7.40 | NP | NP | 7.40 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 8.89 | - | 14.5 | 7.78 | NP | NP | 7.78 | - | 9.57 | - | 14.63 | 7.10 | NP | NP | 7.10 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 8.79 | - | 29.45 | 7.80 | NP | NP | 7.80 | - | 9.47 | - | 29.65 | 7.12 | NP | NP | 7.12 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 4.96 | - | 15.45 | 6.86 | NP | NP | 6.86 | - | 5.63 | - | 15.55 | 6.19 | NP | NP | 6.19 |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-14 | 11.94 | 11.61 | 10.51 | Standpipe | Shallow | 9/12/1994 | 13.97 | 4 - 14 | NP | NP | Decommissioned October 2015 | | | | | | | Decommissioned October 2015 | | | | | | | | |
| NG | RCA-13 | 13.09 | 12.75 | 11.06 | Standpipe | Shallow | 9/12/1994 | 13.61 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-15 | NS | 14.06 | NS | Standpipe | Shallow | 12/8/1994 | 15.97 | 4 - 14 | NP | NP | - | 7.43 | - | 17.87 | 6.63 | NP | NP | 6.63 | - | 8.64 | - | 18.22 | 5.42 | NP | NP | 5.42 |
| NG | RCA-17 | NS | 13.44 | NS | Standpipe | Shallow | 12/9/1994 | 12.80 | 4 - 14 | NP | NP | - | 7.09 | - | 14.73 | 6.35 | NP | NP | 6.35 | - | 7.72 | - | 15.00 | 5.72 | NP | NP | 5.72 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.32 | - | 11.32 | 7.01 | NP | NP | 7.01 | - | 4.19 | - | 11.48 | 6.14 | NP | NP | 6.14 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-6 | 12.91 | 12.93 | 10.25 | Standpipe | Shallow | 1/14/2002 | 9.77 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-7 | 14.30 | 13.73 | 11.29 | Standpipe | Shallow | 1/14/2002 | 12.66 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-10 | 19.45 | 19.10 | 15.88 | Standpipe | Shallow | 1/15/2002 | 14.77 | 5 - 15 | trace - 0.02 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-21 | 13.80 | 13.65 | 11.09 | Standpipe | Shallow | 1/28/2003 | 15.94 | 6 - 16 | trace - 0.08 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-22 | 13.32 | 13.02 | 11.21 | Standpipe | Shallow | 1/28/2003 | 15.49 | 6 - 16 | 0.01 - 0.04 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-23 | 12.98 | 12.80 | 11.37 | Standpipe | Shallow | 1/29/2003 | 16.37 | 6 - 16 | trace - 0.05 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES RW-1 | 12.94 | 12.94 | 11.06 | Recovery Well | Shallow | 2002 | 9.42 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES RW-2 | 14.27 | 14.27 | 11.09 | Recovery Well | Shallow | 2002 | 13.12 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES-RWA | NS | NS | NS | Recovery Well | Shallow | 2017 | 9.80 | Unknown | 0.30 - 0.89 | NP | Decommissioned November 2018 | | | | | | | Decommissioned November 2018 | | | | | | | | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-8R | 14.85 | 14.06 | 12.60 | Standpipe | Shallow | 6/4/2014 | 12.29 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 5.9 | - | 14.91 | 7.38 | NP | NP | 7.38 | - | 6.45 | - | 14.96 | 6.83 | NP | NP | 6.83 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 5.63 | - | 29.64 | 7.50 | NP | NP | 7.50 | - | 6.57 | - | 30.17 | 6.56 | NP | NP | 6.56 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.00 | - | 29.67 | 6.95 | NP | NP | 6.95 | - | 5.78 | - | 29.84 | 6.17 | NP | NP | 6.17 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.30 | - | 14.15 | 6.34 | NP | NP | 6.34 | - | 5.96 | - | 14.25 | 5.68 | NP | NP | 5.68 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.24 | - | 14.72 | 6.25 | NP | NP | 6.25 | - | 5.86 | - | 14.71 | 5.63 | NP | NP | 5.63 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | 3.55 | 3.6 | - | 14.04 | 6.58 | 0.05 | NP | 6.62 | 4.28 | 4.28 | - | 14.11 | 5.90 | trace | NP | 7.63 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 1.5 | - | 10.98 | 7.46 | NP | NP | 7.46 | - | 2.72 | - | 11.1 | 6.24 | NP | NP | 6.24 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.32 | - | 30 | 6.51 | NP | NP | 6.51 | - | 3.65 | - | 30.25 | 6.18 | NP | NP | 6.18 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-403 | 14.52 | 14.29 | 11.45 | Standpipe | Shallow | 11/2/2015 | 14.65 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | Monitoring well found in Summer 2019 | | | | | | | - | 4.56 | - | 10.95 | 6.31 | NP | NP | 6.31 | |
| NG | GZ-503S | 19.71 | 19.61 | 16.77 | Standpipe | Shallow | 9/15/2021 | 14.84 | 2 - 12 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-502S | 13.93 | 13.74 | 11.05 | Standpipe | Shallow | 9/14/2021 | 15.68 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-501S | 15.11 | 14.92 | 12.22 | Standpipe | Shallow | 9/14/2021 | 16.12 | 3 - 13 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-500S | 19.95 | 19.75 | 16.80 | Standpipe | Shallow | 9/14/2021 | 16.83 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | |

Notes
Well is located in the Natural Gas Regulator portion of the Property
Well is located at the LNG Facility
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD88
NP - Indicates No Product observed.
NS - Not Surveyed
Blanks indicate no measurement collected on that particular day.
Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.
Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2019 | | | | | | | November 2019 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|----------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | - | 10.12 | - | 15.24 | 0.54 | NP | NP | 0.54 | - | 10.11 | - | 16.1 | 0.55 | NP | NP | 0.55 |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 8.95 | - | 13.04 | 3.97 | NP | NP | 3.97 | - | 9.62 | - | 13 | 3.30 | NP | NP | 3.30 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 10.93 | - | 17.62 | 4.45 | NP | NP | 4.45 | - | 11.7 | - | 17.75 | 3.68 | NP | NP | 3.68 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5-15 | NP | NP | - | 12.06 | - | 13.79 | 2.92 | NP | NP | - | - | 12.48 | - | 13.80 | 2.50 | NP | NP | - |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | - | 8.15 | - | 12.93 | 6.94 | NP | NP | 6.94 | - | 11.14 | - | 12.95 | 3.95 | NP | NP | 3.95 |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | Filled with sediment from construction | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | - | 8.8 | - | 14.6 | 5.06 | NP | NP | 5.06 | Decommissioned Summer 2019 | | | | | | | |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 7.90 | - | 17.45 | 7.08 | NP | NP | 7.08 | - | 8.63 | - | 17.5 | 6.35 | NP | NP | 6.35 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 12.62 | - | 17.2 | 3.41 | NP | NP | 3.41 | - | 13.20 | - | 15.15 | 2.83 | NP | NP | 2.83 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 12.35 | - | 15.25 | 3.43 | NP | NP | 3.43 | - | 12.99 | - | 16.85 | 2.79 | NP | NP | 2.79 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 12.54 | - | 17.00 | 3.60 | NP | NP | 3.60 | - | 13.2 | - | 16.75 | 2.94 | NP | NP | 2.94 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 14 | - | 18.20 | 3.52 | NP | NP | 3.52 | - | 14.67 | - | 18.25 | 2.85 | NP | NP | 2.85 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | - | 9.00 | - | 20.13 | 4.10 | NP | NP | 4.10 | - | 9.40 | - | 20.32 | 3.70 | NP | NP | 3.70 |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | 9.27 | - | 20.75 | 0.26 | NP | NP | 0.26 | - | 7.19 | - | 21.70 | 2.34 | NP | NP | 2.34 |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.08 | - | 32.17 | 5.82 | NP | NP | 5.82 | - | 9.84 | - | 32.55 | 5.06 | NP | NP | 5.06 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2020 | | | | | | | November 2020 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|-----------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 9.78 | - | 14.46 | 7.55 | NP | NP | 7.55 | - | 9.8 | - | 14.58 | 7.53 | NP | NP | 7.53 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.82 | - | 29.6 | 7.51 | NP | NP | 7.51 | - | 9.95 | - | 29.65 | 7.38 | NP | NP | 7.38 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.38 | - | 14.63 | 7.29 | NP | NP | 7.29 | - | 9.48 | - | 14.61 | 7.19 | NP | NP | 7.19 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.33 | - | 29.61 | 7.26 | NP | NP | 7.26 | - | 9.43 | - | 29.3 | 7.16 | NP | NP | 7.16 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.37 | - | 15.53 | 6.45 | NP | NP | 6.45 | - | 5.6 | - | 15.4 | 6.22 | NP | NP | 6.22 |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-13 | 11.94 | 11.61 | 10.51 | Standpipe | Shallow | 9/12/1994 | 13.97 | 4 - 14 | NP | NP | Decommissioned October 2015 | | | | | | | Decommissioned October 2015 | | | | | | | | |
| NG | RCA-14 | 13.09 | 12.75 | 11.06 | Standpipe | Shallow | 9/12/1994 | 13.61 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-15 | NS | 14.06 | NS | Standpipe | Shallow | 12/8/1994 | 15.97 | 4 - 14 | NP | NP | - | 7.75 | - | 18.93 | 6.31 | NP | NP | 6.31 | - | 7.65 | - | 18.1 | 6.41 | NP | NP | 6.41 |
| NG | RCA-17 | NS | 13.44 | NS | Standpipe | Shallow | 12/9/1994 | 12.80 | 4 - 14 | NP | NP | - | 7.53 | - | 14.73 | 5.91 | NP | NP | 5.91 | - | 7.04 | - | 15 | 6.40 | NP | NP | 6.40 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.86 | - | 11.34 | 6.47 | NP | NP | 6.47 | - | 4.17 | - | 11.35 | 6.16 | NP | NP | 6.16 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-6 | 12.91 | 12.93 | 10.25 | Standpipe | Shallow | 1/14/2002 | 9.77 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-7 | 14.30 | 13.73 | 11.29 | Standpipe | Shallow | 1/14/2002 | 12.66 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-10 | 19.45 | 19.10 | 15.88 | Standpipe | Shallow | 1/15/2002 | 14.77 | 5 - 15 | trace - 0.02 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-21 | 13.80 | 13.65 | 11.09 | Standpipe | Shallow | 1/28/2003 | 15.94 | 6 - 16 | trace - 0.08 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-22 | 13.32 | 13.02 | 11.21 | Standpipe | Shallow | 1/28/2003 | 15.49 | 6 - 16 | 0.01 - 0.04 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-23 | 12.98 | 12.80 | 11.37 | Standpipe | Shallow | 1/29/2003 | 16.37 | 6 - 16 | trace - 0.05 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES RW-1 | 12.94 | 12.94 | 11.06 | Recovery Well | Shallow | 2002 | 9.42 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES RW-2 | 14.27 | 14.27 | 11.09 | Recovery Well | Shallow | 2002 | 13.12 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES-RWA | NS | NS | NS | Recovery Well | Shallow | 2017 | 9.80 | Unknown | 0.30 - 0.89 | NP | Decommissioned November 2018 | | | | | | | Decommissioned November 2018 | | | | | | | | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-8R | 14.85 | 14.06 | 12.60 | Standpipe | Shallow | 6/4/2014 | 12.29 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.3 | - | 14.93 | 6.98 | NP | NP | 6.98 | - | 6.03 | - | 15.05 | 7.25 | NP | NP | 7.25 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.4 | - | 29.93 | 6.73 | NP | NP | 6.73 | - | 6.36 | - | 30.3 | 6.77 | NP | NP | 6.77 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.58 | - | 29.54 | 6.37 | NP | NP | 6.37 | - | 5.71 | - | 29.6 | 6.24 | NP | NP | 6.24 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.73 | - | 14.16 | 5.91 | NP | NP | 5.91 | - | 4.85 | - | 14.2 | 6.79 | NP | NP | 6.79 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.7 | - | 14.77 | 5.79 | NP | NP | 5.79 | - | 5.7 | - | 14.7 | 5.79 | NP | NP | 5.79 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | 4.09 | 4.09 | - | 14.07 | 6.09 | trace | NP | 6.09 | - | 4.14 | - | 14.1 | 6.04 | NP | NP | 6.04 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 2.44 | - | 11 | 6.52 | NP | NP | 6.52 | Unable to access well | | | | | | | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.45 | - | 30.01 | 6.38 | NP | NP | 6.38 | - | 3.85 | - | 30.1 | 5.98 | NP | NP | 5.98 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-403 | 14.52 | 14.29 | 11.45 | Standpipe | Shallow | 11/2/2015 | 14.65 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | - | - | - | - | - | - | - | - | 3.87 | - | 10.6 | 7.00 | NP | NP | 7.00 | |
| NG | GZ-503S | 19.71 | 19.61 | 16.77 | Standpipe | Shallow | 9/15/2021 | 14.84 | 2 - 12 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-502S | 13.93 | 13.74 | 11.05 | Standpipe | Shallow | 9/14/2021 | 15.68 | 5 - 15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-501S | 15.11 | 14.92 | 12.22 | Standpipe | Shallow | 9/14/2021 | 16.12 | 3 - 13 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-500S | 19.95 | 19.75 | 16.80 | Standpipe | Shallow | 9/14/2021 | 16.83 | 5 - 15 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

Notes
Well is located in the Natural Gas Regulator portion of the Property
Well is located at the LNG Facility
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD88
NP - Indicates No Product observed.
NS - Not Surveyed
Blanks indicate no measurement collected on that particular day.
Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.
Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2020 | | | | | | | November 2020 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | - | 10.8 | - | 16.09 | -0.14 | NP | NP | -0.14 | - | 9.9 | - | 15.28 | 0.76 | NP | NP | 0.76 |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 9.74 | - | 13 | 3.18 | NP | NP | 3.18 | - | 8.93 | - | 12.9 | 3.99 | NP | NP | 3.99 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 11.56 | - | 17.72 | 3.82 | NP | NP | 3.82 | - | 11.82 | - | 12.85 | 3.56 | NP | NP | 3.56 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5-15 | NP | NP | - | 12.58 | - | 13.8 | 2.40 | NP | NP | 2.4 | - | 12.57 | - | 13.82 | 2.41 | NP | NP | 2.41 |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | - | 7.55 | - | 12.96 | 7.54 | NP | NP | 7.54 | - | 5.96 | - | 13 | 9.13 | NP | NP | 9.13 |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | - | 11.1 | - | 12.54 | -0.59 | NP | NP | -0.59 | - | 11.14 | - | 12.45 | -0.63 | NP | NP | -0.63 |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | Decommissioned Summer 2019 | | | | | | | Decommissioned Summer 2019 | | | | | | | | |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 8.39 | - | 17.47 | 6.59 | NP | NP | 6.59 | - | 8.62 | - | 17.4 | 6.36 | NP | NP | 6.36 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 13.21 | - | 16.85 | 2.82 | NP | NP | 2.82 | - | 13.34 | - | 17.28 | 2.69 | NP | NP | 2.69 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 12.98 | - | 15.12 | 2.80 | NP | NP | 2.80 | - | 13.3 | - | 15 | 2.48 | NP | NP | 2.48 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 13.21 | - | 16.95 | 2.93 | NP | NP | 2.93 | - | 13.33 | - | 17.1 | 2.81 | NP | NP | 2.81 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 14.64 | - | 18.19 | 2.88 | NP | NP | 2.88 | - | 14.87 | - | 18.23 | 2.65 | NP | NP | 2.65 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | - | 9.59 | - | 20.21 | 3.51 | NP | NP | 3.51 | - | 9.55 | - | 20.27 | 3.55 | NP | NP | 3.55 |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | 8.78 | - | 20.7 | 0.75 | NP | NP | 0.75 | - | 8.81 | - | 20.92 | 0.72 | NP | NP | 0.72 |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.64 | - | 32.46 | 5.26 | NP | NP | 5.26 | - | 9.9 | - | 32.69 | 5.00 | NP | NP | 5.00 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2021 | | | | | | | November 2021 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 10.7 | - | 14.45 | 6.63 | NP | NP | 6.63 | - | 9.23 | - | 14.48 | 8.10 | NP | NP | 8.1 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.76 | - | 29.37 | 7.57 | NP | NP | 7.57 | - | 9.44 | - | 29.37 | 7.89 | NP | NP | 7.89 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.4 | - | 14.51 | 7.27 | NP | NP | 7.27 | - | 8.99 | - | 14.49 | 7.68 | NP | NP | 7.68 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.32 | - | 29.35 | 7.27 | NP | NP | 7.27 | - | 8.92 | - | 29.36 | 7.67 | NP | NP | 7.67 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.29 | - | 14.25 | 6.53 | NP | NP | 6.53 | - | 5.03 | - | 14.65 | 6.79 | NP | NP | 6.79 |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-13 | 11.94 | 11.61 | 10.51 | Standpipe | Shallow | 9/12/1994 | 13.97 | 4 - 14 | NP | NP | Decommissioned October 2015 | | | | | | | Decommissioned October 2015 | | | | | | | | |
| NG | RCA-14 | 13.09 | 12.75 | 11.06 | Standpipe | Shallow | 9/12/1994 | 13.61 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | RCA-15 | NS | 14.06 | NS | Standpipe | Shallow | 12/8/1994 | 15.97 | 4 - 14 | NP | NP | - | 7.71 | - | 18 | 6.35 | NP | NP | 6.35 | - | 7.54 | - | 18.11 | 6.52 | NP | NP | 6.52 |
| NG | RCA-17 | NS | 13.44 | NS | Standpipe | Shallow | 12/9/1994 | 12.80 | 4 - 14 | NP | NP | - | 7.26 | - | 14.78 | 6.18 | NP | NP | 6.18 | - | 7.12 | - | 14.76 | 6.32 | NP | NP | 6.32 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.76 | - | 11.35 | 6.57 | NP | NP | 6.57 | - | 3.52 | - | 11.34 | 6.81 | NP | NP | 6.81 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-6 | 12.91 | 12.93 | 10.25 | Standpipe | Shallow | 1/14/2002 | 9.77 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-7 | 14.30 | 13.73 | 11.29 | Standpipe | Shallow | 1/14/2002 | 12.66 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-10 | 19.45 | 19.10 | 15.88 | Standpipe | Shallow | 1/15/2002 | 14.77 | 5 - 15 | trace - 0.02 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-21 | 13.80 | 13.65 | 11.09 | Standpipe | Shallow | 1/28/2003 | 15.94 | 6 - 16 | trace - 0.08 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-22 | 13.32 | 13.02 | 11.21 | Standpipe | Shallow | 1/28/2003 | 15.49 | 6 - 16 | 0.01 - 0.04 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-23 | 12.98 | 12.80 | 11.37 | Standpipe | Shallow | 1/29/2003 | 16.37 | 6 - 16 | trace - 0.05 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES RW-1 | 12.94 | 12.94 | 11.06 | Recovery Well | Shallow | 2002 | 9.42 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES RW-2 | 14.27 | 14.27 | 11.09 | Recovery Well | Shallow | 2002 | 13.12 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | CHES-RWA | NS | NS | NS | Recovery Well | Shallow | 2017 | 9.80 | Unknown | 0.30 - 0.89 | NP | Decommissioned November 2018 | | | | | | | Decommissioned November 2018 | | | | | | | | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | VHB-8R | 14.85 | 14.06 | 12.60 | Standpipe | Shallow | 6/4/2014 | 12.29 | 2 - 12 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.34 | - | 14.94 | 6.94 | NP | NP | 6.94 | - | 5.92 | - | 14.66 | 7.36 | NP | NP | 7.36 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.94 | - | 30.08 | 6.19 | NP | NP | 6.19 | - | 6.07 | - | 29.64 | 7.06 | NP | NP | 7.06 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.75 | - | 29.6 | 6.2 | NP | NP | 6.2 | - | 5.11 | - | 29.62 | 6.84 | NP | NP | 6.84 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.72 | - | 14.16 | 5.92 | NP | NP | 5.92 | - | 5.35 | - | 14.16 | 6.29 | NP | NP | 6.29 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.6 | - | 14.74 | 5.89 | NP | NP | 5.89 | - | 5.24 | - | 14.76 | 6.25 | NP | NP | 6.25 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | Trace | 5.72 | - | 14.05 | 4.46 | NP | NP | 4.46 | - | 3.45 | - | 14.04 | 6.73 | NP | NP | 6.73 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | Unable to access well | | | | | | | Unable to access well | | | | | | | | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.4 | - | 30.14 | 6.43 | NP | NP | 6.43 | - | 3.8 | - | 30.09 | 6.03 | NP | NP | 6.03 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-403 | 14.52 | 14.29 | 11.45 | Standpipe | Shallow | 11/2/2015 | 14.65 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | - | 4.56 | - | 5.88 | 6.31 | NP | NP | 6.31 | - | 3.97 | - | 5.78 | 6.90 | NP | NP | 6.90 |
| NG | GZ-503S | 19.71 | 19.61 | 16.77 | Standpipe | Shallow | 9/15/2021 | 14.84 | 2 - 12 | NP | NP | Decommissioned June 2021 | | | | | | | Decommissioned June 2021 | | | | | | | | |
| NG | GZ-502S | 13.93 | 13.74 | 11.05 | Standpipe | Shallow | 9/14/2021 | 15.68 | 5 - 15 | NP | NP | Decommissioned June 2021 | | | | | | | Decommissioned June 2021 | | | | | | | | |
| NG | GZ-501S | 15.11 | 14.92 | 12.22 | Standpipe | Shallow | 9/14/2021 | 16.12 | 3 - 13 | NP | NP | Decommissioned June 2021 | | | | | | | Decommissioned June 2021 | | | | | | | | |
| NG | GZ-500S | 19.95 | 19.75 | 16.80 | Standpipe | Shallow | 9/14/2021 | 16.83 | 5 - 15 | NP | NP | Decommissioned June 2021 | | | | | | | Decommissioned June 2021 | | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | Decommissioned June 2021 | | | | | | | Decommissioned June 2021 | | | | | | | | |

Notes
Well is located in the Natural Gas Regulator portion of the Property
Well is located at the LNG Facility
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD88
NP - Indicates No Product observed.
NS - Not Surveyed
Blanks indicate no measurement collected on that particular day.
Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.
Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

**TABLE 9
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2021 | | | | | | | November 2021 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-6 | 10.90 | 10.66 | 10.90 | Roadbox | Shallow | 9/8/1994 | 17.44 | 7 - 17 | NP | NP | Inaccessible at the time of inspection | | | | | | | - | 9.95 | | 15.26 | 0.71 | NP | NP | 0.71 | |
| LNG | RCA-20 | 13.25 | 12.95 | 11.01 | Standpipe | Shallow | 10/18/1995 | 12.26 | 3.5 - 13.5 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-22 | NM | 12.92 | 10.33 | Standpipe | Shallow | Unknown | 10.41 | Unknown | NP | NP | - | 9.43 | - | 13.03 | 3.49 | NP | NP | 3.49 | - | 9.24 | - | 12.93 | 3.68 | NP | NP | 3.68 |
| LNG | RCA-28 | NS | 15.38 | 13.01 | Standpipe | Shallow | 1/17/1995 | 15.43 | 5 - 15 | NP | NP | - | 11.4 | - | 17.7 | 3.98 | NP | NP | 3.98 | - | 11.21 | - | 17.7 | 4.17 | NP | NP | 4.17 |
| LNG | RCA-29 | NS | 13.45 | NS | Standpipe | Shallow | 2/13/1996 | 12.95 | 2 - 12 | trace - 0.17 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-31 | 15.19 | 14.98 | 12.78 | Standpipe | Shallow | 2/23/1996 | 13.30 | 5-15 | NP | NP | - | 12.34 | - | 13.8 | 2.64 | NP | NP | 2.64 | - | 12.17 | - | 13.81 | 2.81 | NP | NP | 2.81 |
| LNG | RCA-32 | NS | 12.16 | NS | Standpipe | Shallow | 2/3/1996 | 10.98 | 4 - 14 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-33 | NS | 9.67 | NS | Standpipe | Shallow | 2/23/1996 | 11.32 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-34 | 15.08 | 15.09 | 12.76 | Standpipe | Shallow | 2/29/1996 | 10.77 | 13 - 18 | NP | NP | - | 7.34 | - | 13 | 7.75 | NP | NP | 7.75 | - | 8.62 | - | 12.96 | 6.47 | NP | NP | 6.47 |
| LNG | RCA-36 | 10.72 | 10.51 | 10.72 | Roadbox | Shallow | 3/1/1996 | 13.37 | 5 - 15 | NP | NP | - | 10.93 | - | 12.41 | -0.42 | NP | NP | -0.42 | - | 10.8 | - | 12.46 | -0.29 | NP | NP | -0.29 |
| LNG | RCA-38 | NS | 9.36 | NS | Standpipe | Shallow | 5/2/1996 | 15.65 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RCA-39 | 14.07 | 13.86 | 11.43 | Standpipe | Shallow | 5/3/1996 | 12.32 | 3 - 13 | NP | NP | Decommissioned Summer 2019 | | | | | | | Decommissioned Summer 2019 | | | | | | | | |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-13 | 12.88 | 12.72 | 13.34 | Roadbox | Shallow | 1/16/2002 | 16.56 | 7 - 17 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | VHB-20 | 15.15 | 14.98 | 13.01 | Standpipe | Shallow | 1/22/2002 | 15.57 | 6 - 16 | NP | NP | - | 8.3 | - | 17.45 | 6.68 | NP | NP | 6.68 | - | 8.14 | - | 17.44 | 6.84 | NP | NP | 6.84 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-1 | NS | NS | NS | Recovery Well | Shallow | 2002 | 6.70 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-2 | NS | NS | NS | Recovery Well | Shallow | 2002 | 9.32 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | ESS RW-3 | 16.03 | 16.03 | 12.99 | Recovery Well | Shallow | 2002 | 13.94 | Unknown | NP | NP | - | 12.85 | - | 17 | 3.18 | NP | NP | 3.18 | - | 12.69 | - | 16.98 | 3.34 | NP | NP | 3.34 |
| LNG | ESS RW-4 | 15.78 | 15.78 | 12.69 | Recovery Well | Shallow | 2002 | 12.06 | Unknown | NP | NP | - | 12.17 | - | 15 | 3.61 | NP | NP | 3.61 | - | 12.39 | - | 15.06 | 3.39 | NP | NP | 3.39 |
| LNG | ESS RW-5 | 16.14 | 16.14 | 12.86 | Recovery Well | Shallow | 2002 | 13.85 | Unknown | NP | NP | - | 12.94 | - | 17.15 | 3.20 | NP | NP | 3.20 | - | 12.7 | - | 17.04 | 3.44 | NP | NP | 3.44 |
| LNG | ESS RW-6 | 17.52 | 17.52 | 14.65 | Recovery Well | Shallow | 2002 | 14.33 | Unknown | NP | NP | - | 14.38 | - | 17.16 | 3.14 | NP | NP | 3.14 | - | 14.11 | - | 18.24 | 3.41 | NP | NP | 3.41 |
| LNG | GZ-101 | 13.43 | 13.10 | 13.43 | Roadbox | Shallow | 4/29/2004 | 20.21 | 10 - 20 | NP | NP | Inaccessible at the time of inspection | | | | | | | - | 9.33 | - | 20.26 | 3.77 | NP | NP | 3.77 | |
| LNG | GZ-201 | 9.83 | 9.53 | 7.53 | Standpipe | Shallow | 4/8/2005 | 18.08 | 10 - 20 | NP | NP | - | 8.52 | - | 20.7 | 1.01 | NP | NP | 1.01 | - | 8.69 | - | 20.72 | 0.84 | NP | NP | 0.84 |
| LNG | GZ-204A | 13.86 | 12.83 | 11.30 | Standpipe | Shallow | 4/12/2005 | 15.92 | 4 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-216 | 12.85 | 11.61 | 10.34 | Standpipe | Shallow | 5/17/2005 | 16.45 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.55 | - | 32.31 | 5.35 | NP | NP | 5.35 | - | 9.92 | - | 32.42 | 4.98 | NP | NP | 4.98 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

TABLE 10
HISTORICAL LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
 642 Allens Avenue
 Providence, Rhode Island

| Date | November 2001 | June 2002 | September 2002 | October 2002 | October 2002 | November 2002 | December 2002 | December 2002 | January 2003 | February 2003 | February 2003 | February 2003 | September 2003 | September 2005 | March 2006 | June 2006 | July 2006 | October 2006 | December 2006 | March 2008 | December 2009 |
|--|---------------|-----------|----------------|--------------|--------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|----------------|----------------|------------|-----------|-----------|--------------|---------------|------------|---------------|
| Natural Gas Regulation Facility | | | | | | | | | | | | | | | | | | | | | |
| RCA-11 | trace | NG | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG | ND | ND | NG | NG | NG | NG | NG | NG | NG |
| RCA-15 | ND | NG | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | ND | NG | NG | NG | NG | NG | NG | NG |
| VHB-1 | NI | trace | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | trace | NG | NG | NG | NG | NG | NG | NG |
| VHB-2 | NI | ND | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG | ND | trace | NG | NG | NG | NG | NG | NG | Dest |
| VHB-3 | NI | trace | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | trace | NG | NG | NG | NG | NG | NG | NG |
| VHB-6 | NI | trace | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | ND | NG | NG | NG | NG | NG | ND | ND |
| VHB-7 | NI | trace | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | ND | NG | NG | NG | NG | NG | trace | ND |
| VHB-9 | NI | trace | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | ND | NG | NG | NG | NG | NG | ND | Dest |
| VHB-10 | NI | trace | 0.01 | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | trace | NG | NG | NG | NG | NG | trace | NG |
| VHB-18 | NI | NI | NI | NG | NG | NG | NG | NG | NG | trace | NG | NG | trace | ND | ND | ND | ND | ND | NG | ND | ND |
| VHB-21 | NI | NI | NI | NG | NG | NG | NG | NG | NG | trace | NG | NG | trace | trace | NG | NG | NG | NG | NG | trace | trace |
| VHB-22 | NI | NI | NI | NG | NG | NG | NG | NG | NG | trace | NG | NG | trace | 0.03 | 0.58 | 0.69 | NG | 0.33 | 0.46 | 0.4 | NG |
| VHB-23 | NI | NI | NI | NG | NG | NG | NG | NG | NG | trace | NG | NG | trace | ND | 0.05 | ND | ND | ND | ND | 0.01 | NG |
| CHES RW-1 | NI | NI | NI | 0.03 | 0.04 | 0.08 | 0.04 | 0.01 | 0.02 | NG | 0.01 | ND | NG | 0.1 | ND | ND | ND | 0.02 | ND | trace | NG |
| CHES RW-2 | NI | NI | NI | ND | ND | ND | ND | ND | ND | NG | ND | ND | NG | ND | NG | NG | NG | NG | NG | trace | NG |
| CHESRW-A | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| GZ-3075 | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| LNG Facility | | | | | | | | | | | | | | | | | | | | | |
| RCA-4 | 0.17 | NG | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| RCA-5 | ND | NG | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | trace | NG | NG | NG | NG | NG | NG | NG |
| RCA-6 | trace | NG | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | trace | NG | NG | NG | NG | NG | NG | NG |
| RCA-21 | NG | NG | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG |
| RCA-22 | ND | NG | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | ND | NG | NG | NG | NG | NG | ND | NG |
| RCA-28 | ND | NG | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | trace | NG | NG | NG | NG | NG | trace | NG |
| RCA-29 | 0.33 | NG | 0.01 | NG | NG | NG | NG | NG | NG | NG | NG | NG | 0.15 | trace | ND | 0.36 | 0.15 | 0.11 | 0.15 | 0.3 | NG |
| RCA-36 | ND | NG | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | trace | NG | NG | NG | NG | NG | ND | NG |
| RCA-39 | ND | NG | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG | ND | trace | NG | NG | NG | NG | NG | NG | NG |
| RCA-40 | 0.25 | NG | 0.01 | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace | trace | 0.1 | 0.21 | 0.18 | 0.22 | 0.01 | 0.01 | NG |
| CHES RW-3 | NI | NI | NI | ND | ND | ND | ND | ND | ND | NG | ND | ND | NG | ND | NG | NG | NG | NG | NG | NG | NG |
| CHES RW-4 | NI | NI | NI | 0.03 | 0.02 | 0.09 | 0.08 | 0.05 | 0.03 | NG | 0.03 | 0.02 | NG | 2 | ND | 0.18 | 0.13 | 0.1 | 0.08 | 0.09 | NG |
| CHES RW-5 | NI | NI | NI | 0.05 | 0.04 | 0.12 | 0.09 | 0.06 | 0.05 | NG | 0.02 | 0.02 | NG | 0.5 | 0.1 | ND | ND | 0.01 | ND | trace | NG |
| ESS RW-1 | NI | NI | NI | NG | NG | NG | NG | NG | NG | NG | NG | NG | ND | ND | NG | NG | NG | NG | NG | NG | NG |
| ESS RW-2 | NI | NI | NI | NG | NG | NG | NG | NG | NG | NG | NG | NG | ND | ND | NG | NG | NG | NG | NG | NG | NG |
| ESS RW-4 | NI | NI | NI | NG | NG | NG | NG | NG | NG | NG | NG | NG | ND | 0.5 | NG | NG | NG | NG | NG | NG | NG |
| RW-1 | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |

Notes:
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the Former CNG Fueling Station portion of the Property
 NG - Not Gauged
 RCA-21 was destroyed in late June 2014 and replaced with RW-1

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet
 ND - Not Detected
 NI - Not Installed Yet
 Dest - Destroyed
 trace - seen or less than 0.01 feet
 Decom - Decommissioned

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

TABLE 10
HISTORICAL LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
 642 Allens Avenue
 Providence, Rhode Island

| Date | June 2010 | January 2011 | July 2011 | August 2011 | February 2012 | July 2012 | February 2013 | November 2013 | June 2014 | July 2, 2014 | July 23, 2014 | October 2014 | April 2015 | October 2015 | May 2016 | October 2016 | May 2017 | March 2018 | November 2018 | June 2019 | November 2019 | June 2020 | November 2020 | June 2021 | November 2021 |
|-------------------------------|-----------|--------------|-----------|-------------|---------------|-----------|---------------|---------------|-----------|--------------|---------------|--------------|------------|--------------|----------|--------------|----------|------------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|
| Natural Gas Regulation | | | | | | | | | | | | | | | | | | | | | | | | | |
| RCA-11 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| RCA-15 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| VHB-1 | NG | NG | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| VHB-2 | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| VHB-3 | NG | NG | ND | trace | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| VHB-6 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| VHB-7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| VHB-9 | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| VHB-10 | ND | trace | trace | 0.01 | trace | 0.02 | ND | 0.01 | trace | trace | ND | ND | ND | trace | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| VHB-18 | ND | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| VHB-21 | ND | ND | ND | ND | ND | 0.01 | 0.01 | trace | ND | trace | 0.08 | ND | 0.01 | trace | 0.01 | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| VHB-22 | NG | NG | 0.01 | ND | trace | 0.04 | ND | 0.01 | trace | NG | NG | 0.04 | 0.01 | 0.03 | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| VHB-23 | NG | NG | 0.01 | 0.05 | trace | ND | 0.01 | ND | 0.03 | NG | NG | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| CHES RW-1 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| CHES RW-2 | NG | NG | ND | ND | trace | ND | trace | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| CHESRW-A | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | 0.89 | 0.3 | Decom | Decom | Decom | Decom | Decom | Decom |
| GZ-3075 | NI | NI | NI | NI | NI | NI | NI | NI | ND | ND | ND | ND | ND | ND | 0.08 | 0.05 | 0.02 | 0.36 | trace | trace | trace | trace | ND | Trace | ND |
| LNG Facility | | | | | | | | | | | | | | | | | | | | | | | | | |
| RCA-4 | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| RCA-5 | NG | NG | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| RCA-6 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| RCA-21 | NG | NG | 3.58 | 2.94 | 2.79 | 1.65 | 1.44 | 1.91 | 0.91 | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| RCA-22 | NG | ND | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| RCA-28 | NG | ND | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| RCA-29 | NG | NG | 0.08 | trace | trace | 0.11 | trace | ND | 0.17 | NG | NG | 0.08 | 0.02 | 0.10 | 0.01 | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| RCA-36 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Damaged | ND | ND | ND | ND |
| RCA-39 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| RCA-40 | NG | NG | ND | ND | trace | trace | trace | ND | ND | NG | NG | ND | 0.04 | trace | 0.02 | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| CHES RW-3 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | trace | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| CHES RW-4 | NG | NG | 0.02 | 0.03 | 0.01 | trace | trace | 0.01 | ND | NG | trace | trace | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| CHES RW-5 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | 0.01 | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| ESS RW-1 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | trace | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| ESS RW-2 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | trace | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| ESS RW-4 | NG | NG | ND | ND | ND | ND | ND | ND | ND | NG | NG | ND | ND | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| RW-1 | NI | NI | NI | NI | NI | NI | NI | NI | NI | 0.02 | trace | 0.01 | trace | trace | trace | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |

Notes:
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the Former CNG Fueling Station portion of the Property
 NG - Not Gauged
 RCA-21 was destroyed in late June 2014 and replaced with RW-1
 Please refer to Table 5 for monthly gauging and recovery data for GZ-3075
 This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet
 ND - Not Detected
 NI - Not Installed Yet
 Dest - Destroyed
 trace - sheen or less than 0.01 feet
 Decom - Decommissioned

TABLE 11
HISTORICAL DENSE NON-AQUEOUS PHASE LIQUID (DNAPL) WELL GAUGING DATA
 642 Allens Avenue
 Providence, Rhode Island

| Date | November 2001 | September 2002 | September 2003 | September 2005 | March 2008 | December 2009 | June 2010 | January 2011 | July 2011 | August 2011 | February 2012 | July 2012 | February 2013 | November 2013 | June 2014 |
|-------|---------------|----------------|----------------|----------------|------------|---------------|-----------|--------------|-----------|-------------|---------------|-----------|---------------|---------------|-----------|
| RCA-3 | 0.17 | trace | trace | trace | ND | ND | ND | trace | trace | trace | trace | trace | trace | trace | trace |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

NG - Not Gauged

This table presents DNAPL thickness data for monitoring wells that have exhibited DNAPL thicknesses of at least trace amounts since installation or less than 0.01 feet

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

Decom - Decommissioned

TABLE 11
HISTORICAL DENSE NON-AQUEOUS PHASE LIQUID (DNAPL) WELL GAUGING DATA
 642 Allens Avenue
 Providence, Rhode Island

| Date | July 2, 2014 | July 23, 2014 | October 2014 | April 2015 | October 2015 | May 2016 | October 2016 | May 2017 | March 2018 | November 2018 | June 2019 | November 2019 | November 2020 |
|-------|--------------|---------------|--------------|------------|--------------|----------|--------------|----------|------------|---------------|-----------|---------------|---------------|
| RCA-3 | trace | trace | trace | trace | trace | trace | Decom | Decom | Decom | Decom | Decom | Decom | Decom |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the CNG Fueling Station portion of the Property

NG - Not Gauged

This table presents DNAPL thickness data for monitoring wells that have exhibited DNAPL thicknesses of at least trace amounts since installation or less than 0.01 feet

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

Decom - Decommissioned

TABLE 12
SUMMARY OF SHEEN OBSERVATIONS
642 Allens Avenue
Providence, Rhode Island

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|----------------------------------|-------------------------|---|---|
| 9/22/2011 | 8:40 | Low | Along shoreline stretching from RCA-40 to RCA-3. | Small dull spots. |
| 9/22/2011 | 9:00 | Low | Outfall proximate to Motiva property. | Moderate dull bands. |
| 9/22/2011 | 9:15 | Low | Along shoreline stretching from RCA-40 to RCA-3. | Large dull bands and moderate dull spots. |
| 10/28/2011 | 9:00 | High | No sheens observed. Boom was repaired | |
| | 14:30 | Mid-Low | No sheens observed. | |
| 12/22/2011 | 10:40 | Low | Outside of Boom, along shoreline stretching from RCA-5 to RCA-20. | Moderate dull bands and small dull spots. |
| 12/22/2011 | 10:40 | Low | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Large dull bands and moderate dull spots. |
| 12/22/2011 | 11:00 | Low | Outfall proximate to Motiva property. | Very small dull spots |
| 2/3/2012 | 12:00 | Low-Mid | Outside of Boom, north of the RIPDES outfall (within cove) | Moderate dull spots |
| 2/8/2012 | 15:10 | Mid | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Small dull spots. |
| 2/15/2012 | 11:55 | Mid | Outside of Boom, along shoreline stretching from RCA-5 to RCA-20. | Small dull spots. |
| 2/15/2012 | 11:55 | Mid | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Large bright bands. |
| 2/23/2012 | 15:00 | Low | No sheens observed. | |
| 3/2/2012 | 14:20 | High | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Minor to moderate dull spots and bands of sheen |
| 3/2/2012 | 14:30 | High | Outfall proximate to Motiva property. | Large bright bands. |
| 3/9/2012 | 13:10 | Low | Outside of boom, along shoreline stretching from CHES RW-5 to RW-3. | Moderate to minor dull spots of sheen |
| 3/9/2012 | 13:05 | Low | Outfall proximate to Motiva property. | Slight bright bands of sheen |
| 4/13/2012 | 10:53 | Mid | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Moderate to minor dull spots of sheen |
| 4/13/2012 | 10:58 | Mid | Outfall proximate to Motiva property. | Slight bright bands of sheen |
| 5/16/2012 | 13:45 | Mid-High | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Minor to moderate dull bands of sheen |
| 5/16/2012 | 13:45 | Mid-High | Outfall proximate to Motiva property. | Moderate bright bands of sheen |
| 6/29/2012 | 9:35 | Low | Outside of boom, near LNG tank | Bright large sheen spot |
| 6/29/2012 | 9:35 | Low | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Bright to dull bands of sheen |
| 6/29/2012 | 9:45 | Low | Outfall proximate to Motiva property. | Slight dull spots |
| 7/19/2012 | 9:50 | Low | Outside of Boom, north of the RIPDES outfall (within cove) to Propane House | Bright moderate sheen spots |
| 7/19/2012 | 9:50 | Low | Outfall proximate to Motiva property. | Bright moderate sheen spots |
| 8/2/2012 | 8:45 | High | Within the boom, along shoreline at CHES RW-4. Boom was repaired. | |
| 8/24/2012 | 10:10 | Mid | Outside of boom, near CHES RW-4 | Bright moderate sheen spot |
| 8/24/2012 | 10:10 | Mid | Within the boom, from CHES RW-4 to Propane House | Bright moderate sheen spots and bands |
| 8/24/2012 | 10:10 | Mid | Outside of boom, from Propane House to RCA-3 | Bright slight sheen spots and bands |
| 8/24/2012 | 10:10 | Mid | Outfall proximate to Motiva property. | Bright slight sheen spots and bands |
| 9/6/2012 | No sheens observed at high tide. | | | |
| 9/13/2012 | 11:20 | Low | Within the boom, near CHES RW-4 | Bright slight sheen bands |
| 9/13/2012 | 11:45 | Low | Outside of boom, near CHES RW-4 | Bright slight sheen spot |
| 9/13/2012 | 11:45 | Low | Within the boom, between CHES RW-3 and CHES RW-4 | Bright moderate bands and spots of sheen |
| 9/25/2012 | 14:00 | Mid | Outfall proximate to Motiva property. | Slight bright bands of sheen |
| 10/31/2012 | 10:15 | High | Within the boom, near CHES RW-4 | Slight bright spots of sheen |
| 11/19/2012 | No sheens observed at high tide. | | | |
| 11/20/2012 | 16:20 | Mid-High | Within the boom, between CHES RW-3 and CHES RW-4. Boom was repaired. | Moderate long bright bands of sheen |
| 12/20/2012 | 12:00 | Mid-High | No sheens observed. | |

TABLE 12
SUMMARY OF SHEEN OBSERVATIONS
642 Allens Avenue
Providence, Rhode Island

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|---------------------|-------------------------|--|---|
| 1/4/2013 | | | No sheen observed at high tide. | |
| 2/1/2013 | | | No sheens observed at high tide. High wind was also noted. | |
| 2/26/2013 | 12:48 | Low | Within the boom, near CHES RW-4 | Slight bright spots of sheen |
| 2/26/2013 | 12:52 | Low | Within the boom, between CHES RW-3 and CHES RW-4 | Slight bright spots of sheen |
| 2/26/2013 | 12:56 | Low | Outfall proximate to Motiva property. | Moderate long bright bands of sheen |
| 3/22/2013 | 11:22 | Low | Within the boom, between CHES RW-3 and CHES RW-4 | Moderate bright bands of sheen |
| 3/25/2013 | 11:00 | Low | Within the boom, within sediments exposed at low tide between CHES RW-3 and CHES RW-4 | Slight sheen spots |
| 4/2/2013 | 11:00 | Mid | Within the boom, near CHES RW-4 | Bright bands of sheen |
| 4/24/2013 | | | No sheens observed at high tide. | |
| 4/30/2013 | | | No sheens observed at high tide. | |
| 5/6/2013 | | | No sheens observed at high tide. | |
| 5/14/2013 | 8:15 | Mid-High | Within the boom, between CHES RW-3 and CHES RW-4 | Bands of dull sheen |
| 5/24/2013 | | | No sheens observed at mid-high tide. | |
| 5/31/2013 | 8:00 | Low | Within the boom, between CHES RW-3 and CHES RW-5 | Slight dull bands and spots |
| 5/31/2013 | 9:45 | Mid | Within the boom, between CHES RW-3 and CHES RW-5 | Slight to moderate dull bands and spots |
| 5/31/2013 | 9:50 | Mid | Within the boom, within sediments exposed at mid tide between CHES RW-3 and CHES RW-4 | Bright spots of sheen |
| 6/2/2013 | | | No sheens observed at mid tide. High wind was also noted. | |
| 6/3/2013 | 9:10 | Low | Outside the boom, directly near the repair area (proximate to the gate area) in the LNG portion of the property | Bright to dull spots and blebs of sheen |
| 6/3/2013 | 9:10 | Low | Within the boom, between CHES RW-3 and CHES RW-5 | Moderate dull bands of sheen |
| 6/3/2013 | 12:30 | Mid | Within the boom, between CHES RW-3 and CHES RW-5 | Slight dull bands of sheen |
| 6/3/2013 | 13:15 | Mid | Outside the boom, along the edge of the LNG portion of the property, directly adjacent to the pathway. The sheen was noted as originating from the western part of the cove. | Slight dull bands of sheen |
| 6/10/2013 | | | No sheens observed at high tide. | |
| 6/11/2013 | 12:30 | Mid-High | Within the boom, between CHES RW-3 and CHES RW-5 | Moderate bright bands of sheen |
| 6/13/2013 | 14:25 | Mid | Within the boom, proximate to CHES RW-5 | Moderate dull to bright bands and spots |
| 6/19/2013 | | | No sheens observed at high tide. | |
| 6/20/2013 | 8:30 | Mid | Within the boom, between CHES RW-3 and CHES RW-5 | Moderate bright bands of sheen |
| 6/25/2013 | 11:00 | High | Within the boom, near CHES RW-4 | Slight bright spots of sheen |
| 7/31/2013 | | | No sheens observed at high tide. | |
| 8/28/2013 | 12:30 | Mid-High | Within the boom, directly near the repair area (proximate to the gate area) in the LNG portion of the property | Very slight bright spots |
| 9/5/2013 | 15:06 | Low | Within the boom, near CHES RW-4 | Bright to dull spots and blebs of sheen |
| 9/27/2013 | | | No sheens observed at high tide. High wind was also noted. | |
| 10/30/2013 | 8:30 | Mid | Within the boom, directly near the repair area (proximate to the gate area) in the LNG portion of the property | Very slight bright spots |
| 11/19/2013 | | | No sheens observed at high tide. High wind was also noted. | |
| 12/20/2013 | 10:15 | Mid - Low | Within the boom, directly near the repair area (proximate to the gate area) in the LNG portion of the property | Very slight bright spots |

**TABLE 12
SUMMARY OF SHEEN OBSERVATIONS**

642 Allens Avenue
Providence, Rhode Island

File No. 03.00033554.01
5/6/2022

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|--|-------------------------------|--|---|
| 1/27/2014 | 9:53 | Low | Outfall proximate to Motiva property. | Slight bright bands of sheen |
| 2/25/2014 | 14:00 | Mid - High | Within the boom, between CHES RW-3 and CHES RW-4 | Slight dull bands of sheen |
| 3/20/2014 | 9:15 | Mid - High | Within the boom, between CHES RW-3 and CHES RW-5. Boom was repaired. | Moderate long dull bands of sheen |
| 4/29/2014 | 12:30 | Mid-Low | Within the boom, between CHES RW-4 and CHES RW-5 | Slight dull bands of sheen |
| | 12:40 | | Outfall proximate to Motiva property. | Slight bright spots of sheen |
| 5/22/2014 | No sheens observed at high tide. High wind and rain were also noted. | | | |
| 6/3/2014 | No sheens observed at high tide. | | | |
| 7/24/2014 | No sheens observed at high tide. | | | |
| 8/24/2014 | No sheens observed at high tide. High wind was also noted. | | | |
| 9/24/2014 | 10:25 | High-Mid | Within the boom, near CHES RW-3 | Slight dull sheen spots and bands |
| | 10:30 | | Within the boom, near Propane House | Moderate dull to bright bands and spots |
| 10/30/2014 | 7:30 | Low | Inside and outside boom, between CHES RW-3 and CHES RW-5 | Slight bands of dull sheen |
| | | | Within the boom, near CHES RW-3 | Strong bright bands of sheen |
| 11/13/2014 | No sheens observed at high tide. Boom was repaired. | | | |
| 12/12/2014 | 14:00 | Mid | Within the boom, near CHES RW-3 | Slight dull bands of sheen |
| 1/29/2015 | No sheens observed at mid tide. | | | |
| 2/25/2015 | No sheens observed. Cove completely frozen over. | | | |
| 3/23/2015 | No sheens observed at high tide. High wind was also noted. | | | |
| 4/9/2015 | No sheens observed at high tide. High wind was also noted. Hard boom and absorbent boom were replaced. | | | |
| 5/22/2015 | 7:43 | Low | Within the boom, near CHES RW-3 | Very slight bright spots |
| 6/17/2015 | No sheens observed at mid tide. High wind was also noted. | | | |
| 7/17/2015 | 11:29 | Mid | Within the boom, between CHES RW-3 and RCA-5 | Moderate to bright spots of sheen |
| 8/28/2015 | 12:20 | Low | Inside and outside boom, between CHES RW-3 and CHES RW-5 | Moderate dull spots of sheen |
| 9/16/2015 | 9:40 | Mid-High | Within the boom, near CHES RW-3 | Slight dull bands of sheen |
| 10/14/2015 | No sheens observed at high tide. | | | |
| 11/17/2015 | No sheens observed at high tide. Boom was repaired. | | | |
| 12/30/2015 | No sheens observed at high tide. | | | |
| 1/29/2016 | No sheens observed at mid tide. | | | |
| 2/22/2016 | 12:00 | Mid-High | Within Boom near CHES RW-3 | Slight sheen spots |
| 3/16/2016 | 8:30 | Mid-High | Within Boom between CHES RW-3 and CHES RW-5 | Minor sheening. Dull to bright streaks of sheen |
| 4/28/2016 | 3:30 | Mid-High | Within Boom near CHES RW-3 | Bright Plates/Streaks of Sheen |
| 5/19/2016 | 11:00 | Mid-Low | Within Boom near CHES RW-3 | Dull plates of sheen |
| 6/10/2016 | No sheens observed at mid-high tide. | | | |
| 7/26/2016 | 10:00 | Low | Within Boom near CHES RW-3 | Slight sheen |
| 8/30/2016 | 13:00 | Low | Inside and outside boom, between CHES RW-3 and CHES RW-5 | Plates of sheen |
| 9/16/2016 | 9:00 | High | Within Boom | Slight Sheen (Streaks) |
| 10/30/2016 | No sheens observed | | | |
| 11/30/2016 | 11:00 | Mid | Within Boom near CHES RW-3 | Platlets of sheen |
| 12/13/2016 | 11:45 | No sheen observed at low tide | | |

TABLE 12
SUMMARY OF SHEEN OBSERVATIONS
642 Allens Avenue
Providence, Rhode Island

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|---------------------|-------------------------|---|--|
| 1/31/2017 | | | No sheens observed at mid tide | |
| 2/27/2017 | 9:00 | Mid-Low | Within Boom near CHES RW-3 | Streaks of sheen |
| 3/24/2017 | | | No sheens observed at high tide | |
| 4/28/2017 | | | No sheens observed at high tide | |
| 5/5/2017 | | | No sheens observed at high tide | |
| 6/30/2017 | | | No sheens observed at high tide | |
| 7/27/2017 | | | No sheens observed at high tide | |
| 8/1/2017 | 16:00 | High | Within Boom near CHES RW-3 | Some plates of sheen |
| 9/1/2017 | 12:50 | Mid | Within Boom near CHES RW-3 | Dull streaks of sheen |
| 9/29/2017 | 11:00 | Mid-High | Within Boom near CHES RW-3 | Some streaks of sheen |
| 10/24/2017 | | | No sheens observed at high tide | |
| 11/21/2017 | | | No sheens observed at high tide | |
| 12/21/2017 | | | No sheens observed at low tide | |
| 1/24/2018 | 13:00 | | No sheens observed at high tide | |
| 2/21/2018 | 12:00 | | No sheens observed at high tide | |
| 3/20/2018 | 11:00 | | No sheens observed at high tide | |
| 4/26/2018 | 7:00 | | No sheens observed at high tide | |
| 5/15/2018 | 14:00 | | No sheens observed at low tide | |
| 6/28/2018 | 14:00 | | No sheens observed at low tide | |
| 7/30/2018 | 13:00 | Mid | Along shoreline. | Some streaks of sheen, dull to bright plates |
| 8/30/2018 | 9:30 | Mid-high | Between hard boom and shore | Dull streaks of sheen |
| 10/1/2018 | 7:00 | Low | Between hard boom and shore | Bright streaks of sheen |
| 10/30/2018 | 10:30 | | No sheens observed at mid tide | |
| 11/14/2018 | 7:00 | | No sheens observed at high tide | |
| 12/19/2018 | 11:15 | Low tide | No sheens observed | |
| 1/30/2019 | 11:00 | Low tide | Between hard boom and shore proximate to former well RW-3 | Dull streaks of sheen |
| 2/27/2019 | 13:00 | Mid-high tide | Between hard boom and shore proximate to former well RW-3 | Dull plates and streaks of sheen |
| 3/20/2019 | 13:00 | Low | Between hard boom and shore proximate to former well RW-3 | Dull plates and bright streaks of sheen |
| 4/22/2019 | 11:00 | | No sheens observed at high tide | |
| 5/31/2019 | 7:00 | | No sheens observed at high tide | |
| 6/26/2019 | 15:00 | High | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 7/25/2019 | 14:30 | High | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 8/22/2019 | 13:00 | High | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 9/27/2019 | 7:00 | | No sheens observed at high tide | |
| 10/21/2019 | 14:30 | | No sheens observed at high tide | |
| 11/21/2019 | 10:00 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 12/18/2019 | 9:00 | | No sheens observed at mid tide | |

TABLE 12
SUMMARY OF SHEEN OBSERVATIONS
642 Allens Avenue
Providence, Rhode Island

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|---------------------|-------------------------|---|---------------------------------------|
| 1/24/2020 | 8:30 | Mid Tide | Along shoreline proximate to former well RW-3. | Dull to bright plates of sheen |
| 2/24/2020 | 12:00 | | No sheens observed at low tide | |
| 3/26/2020 | 12:45 | | No sheens observed at mid to high tide | |
| 4/23/2020 | 8:00 | | No sheens observed at high tide | |
| 5/22/2020 | 8:45 | | No sheens observed at high tide | |
| 6/9/2020 | 15:00 | | No sheens observed at mid to low tide | |
| 7/17/2020 | 12:30 | Mid-low Tide | Along shoreline proximate to former well RW-3. | Slight dull to bright plates of sheen |
| 8/11/2020 | 7:15 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Large dull to bright plates of sheen |
| 8/20/2020 | 12:15 | | No sheens observed at mid to low tide | |
| 9/22/2020 | 9:00 | | No sheens observed at mid to high tide | |
| 10/26/2020 | 12:00 | | No sheens observed at low tide | |
| 11/24/2020 | 7:00 | | No sheens observed at mid to high tide | |
| 12/11/2020 | 10:37 | Low Tide | Between hard boom and shore proximate to former well RW-3 | Minor dull to bright plates of sheen |
| 1/22/2021 | 13:37 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | |
| 2/9/2021 | 7:07 | High-tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 3/15/2021 | 8:54 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | |
| 4/20/2021 | 11:51 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | |
| 5/21/2021 | 13:14 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 6/23/2021 | 10:00 | Low-tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 7/26/2021 | 7:29 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Large bright plates of sheen |
| 8/13/2021 | 10:39 | High-tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 9/27/2021 | 10:10 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 10/18/2021 | 15:01 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | |
| 11/18/2021 | 12:10 | Low-tide | Between hard boom and shore proximate to former well RW-3 | |
| 12/20/2021 | 10:23 | High-tide | Between hard boom and shore proximate to former well RW-3 | |

2. A water line directly proximate to the Providence River at the LNG facility unexpectedly failed on May 31, 2013. This water line provided fire protection for the LNG facility. Immediate response actions included deploying additional absorbent booms, repairing a rip-rap slope and temporarily repairing the line for fire protection. The water line was replaced in the fall of 2013. Additional boom was deployed on May 31, 2013 and June 3, 2013 after additional sheens were observed outside the original boom configuration.



FIGURES

SITE INVESTIGATION REPORT (SIR) ADDENDUM FORMER MANUFACTURED GAS PLANT (MGP) 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND

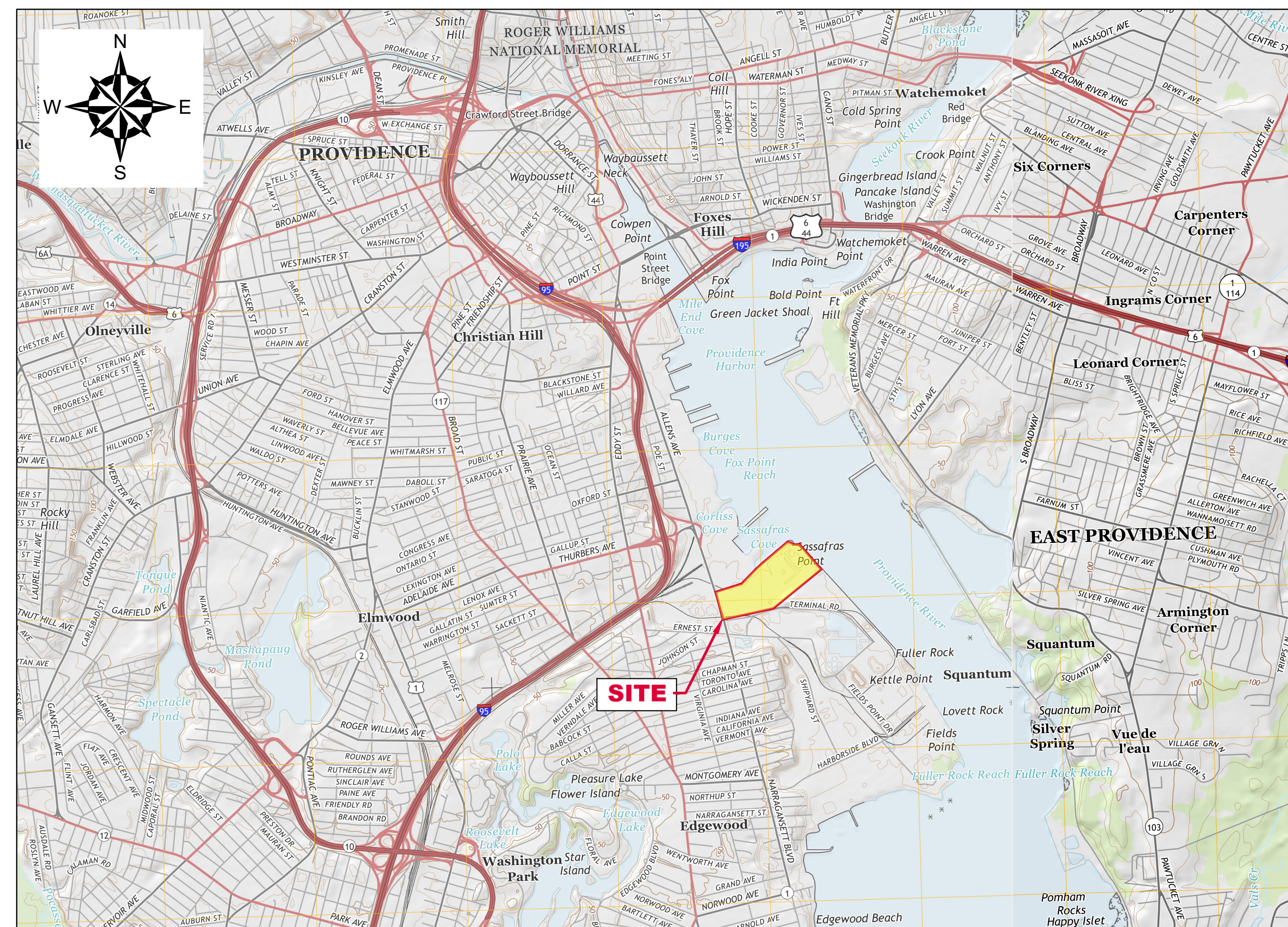
DECEMBER 2023

PREPARED FOR:

THE NARRAGANSETT ELECTRIC COMPANY
DBA RHODE ISLAND ENERGY

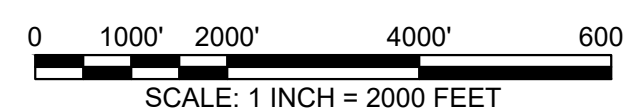
PREPARED BY:

GZA GEOENVIRONMENTAL, INC.
188 VALLEY STREET, SUITE 300
PROVIDENCE, RHODE ISLAND 02909



LOCUS MAP

SOURCE: USGSSTORE.GOV



| INDEX TO FIGURES | |
|------------------|--|
| FIGURE # | SHEET TITLE |
| 1 | TITLE SHEET AND INDEX TO DRAWINGS |
| 2 | GENERAL NOTES AND LEGEND |
| 3A | EXISTING CONDITIONS PLAN - WESTERN SIDE OF THE SITE |
| 3B | EXISTING CONDITIONS PLAN - EASTERN SIDE OF THE SITE |
| 4 | OVERALL AERIAL |
| 5A | EXPLORATION LOCATION PLAN - WESTERN SIDE OF THE SITE |
| 5B | EXPLORATION LOCATION PLAN - EASTERN SIDE OF THE SITE |
| 6A | GROUNDWATER MONITORING WELLS |
| 6B | SHALLOW GROUNDWATER CONTOURS (MAY 2016) |
| 7 | COMPLETED REMEDIAL ACTIONS (1995-2022) |
| 8 | EXISTING ENGINEERED CONTROLS |
| 9 | RECOMMENDED REMEDIAL ALTERNATIVE (RAA#2) |

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LEGEND:

| | |
|--|--|
| | PROPERTY LINE |
| | INTERIOR PROPERTY LINE |
| | EASEMENT AREA |
| | UTILITY POLE |
| | LIGHT POLE |
| | MH#52 |
| | MANHOLE |
| | STRUCTURE NOT FOUND |
| | PLING |
| | OLD ELLIS STREET SEWER DRAIN LINE |
| | SEWER AND STORM DRAIN & ACTIVE STRUCTURES |
| | EDGE OF WATER |
| | EXISTING FENCE |
| | LNG DOUBLE SECURITY FENCE |
| | RAILROAD TRACKS |
| | EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL) |
| | EXISTING CONTOUR (MINOR 1 FOOT INTERVAL) |
| | CURRENT OPERATIONS/SITE AREA BOUNDARY |
| | HYDRANT |
| | EXISTING FORCE MAIN (ABOVE GROUND) |
| | EXISTING FORCE MAIN (BELOW GROUND) |
| | REMEDIAL ACTIONS |
| | HISTORIC STRUCTURE OR FEATURE |
| | 200 FOOT CRMC BUFER |
| | 642 ALLENS AVENUE FORMER MGP SITE BOUNDARY |
| | FLOOD ZONE VE (EL. 14) LIMIT |
| | FLOOD ZONE AE (EL. 12) LIMIT |

AREAS EQUIVALENT TO AN ENGINEERED CAP

| | |
|-------------------------|---|
| | BUILDING/STRUCTURE |
| | PAVED AREAS |
| | CONTAINMENT DIKE (CLEAN SOIL MATERIAL) |
| | CONCRETE |
| AREAS OF CAPPING | |
| | AREAS CAPPED WITH APPROXIMATELY 18-20 INCHES OF CLEAN SAND, APPROXIMATELY 4-6 INCHES OF LOAM AND HYDROSEED |
| | AREAS CAPPED WITH GEOTEXTILE, 6 INCHES OF COMPACTED GRANULAR FILL AND 6 INCHES OF TOPSOIL |
| | AREAS CAPPED WITH COMBINATION LLDPE LINER AND GEOTEXTILE, 6 INCHES OF COMPACTED GRANULAR FILL AND 6 INCHES OF TOPSOIL |
| | AREAS CAPPED WITH APPROXIMATELY 18-20 INCHES OF CLEAN SAND AND APPROXIMATELY 4-6 INCHES OF CRUSHED STONE |
| | AREAS CAPPED WITH CLEAN SAND AND CRUSHED STONE (AT LEAST 2 FEET) |
| | AREAS CAPPED WITH GEOTEXTILE, 6 INCHES OF CRUSHED STONE, AND 6 INCHES COMPACTED GRANULAR FILL |
| | AREAS CAPPED WITH 2 FEET OF CLEAN FILL |
| | AREAS CAPPED WITH APPROXIMATELY 2 FEET OF STONE DUST |
| | AREAS CAPPED WITH GEOTEXTILE AND APPROXIMATELY 2 FEET OF RIP RAP |
| | AREAS CAPPED WITH GEOTEXTILE AND 12 INCHES OF RIP RAP |
| | AREAS CAPPED WITH COMBINATION LLDPE LINER AND GEOTEXTILE, 8 INCHES OF PROCESSED GRAVEL AND 4 INCHES OF PAVEMENT |
| | AREAS CAPPED WITH GEOTEXTILE AND 6-12 INCHES OF SHREDDED BARK MULCH |
| | AREAS CAPPED WITH GEOTEXTILE AND 4-6 INCHES OF CRUSHED STONE AND 6-8 INCHES PROCESSED GRAVEL |
| | AREAS CAPPED WITH 6 INCHES CRUSHED STONE AND 18 INCHES PROCESSED GRAVEL |
| | AREAS OF PROPOSED PROGRESSIVE CAPPING |

EXPLORATION LEGEND:

| | | |
|--------------------------------|------------|--|
| | GZ-500 S/D | ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021 |
| | GZ-401 | ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015 |
| | GZ-314 S/D | ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014 |
| | VHB-7 | ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003 |
| | F47 | ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000 |
| | 1 | ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 |
| | RHB-1 | ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998 |
| | RCA-40 | ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996 |
| | TP-301 | ENVIRONMENTAL TEST PITS OBSERVED BY GZA IN 2014 |
| | VHB TP-101 | ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008 |
| | TP-39 | ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002 |
| | ETP-4 | ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996 |
| | SS-301 | SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014 |
| | VHB-SS2 | SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003 |
| | SU-6 No.9 | SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995 |
| | RSS-1 | SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995 |
| | CHES-RW-A | RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017 |
| | RW-1 | RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014 |
| | CHES-RW-1 | RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002 |
| | ESS-RW-1 | RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000 |
| | PRV-1 | GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019 |
| | B-211 | GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016 |
| | GZ-3 | GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016 |
| | PP-2 | GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015 |
| | SB-01 | GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WA) IN 2015 |
| | GZA-206 | GEOTECHNICAL BORING OBSERVED BY GZA IN 2005 |
| | GZ-1 | GEOTECHNICAL BORING OBSERVED BY GZA IN 2004 |
| | SWBL13 | GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995 |
| | B-207 | GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973 |
| | B-25 | GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972 |
| | PGC-8 | GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912 |
| | W155 | CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999 |
| MONITORING WELL LEGEND: | | |
| | GZ-313DR | REPLACEMENT MONITORING WELL OBSERVED BY GZA IN 2023 |
| | GZ-401 | MONITORING WELL INSTALLED BY GZA IN 2015 |
| | GZ-314 S/D | MONITORING WELL INSTALLED BY GZA IN 2014 |
| | GZA-206 | MONITORING WELL INSTALLED BY GZA IN 2005 |
| | VHB-7 | MONITORING WELL INSTALLED BY VHB IN 2002 AND 2003 |
| | F47 | TEMPORARY WELL POINT INSTALLED BY ESS IN 1999 AND 2000 |
| | 1 | TEMPORARY WELL POINT INSTALLED BY ESS IN 1999 |
| | RCA-40 | MONITORING WELL INSTALLED BY ESS IN 1996 |
| | RW-1 | RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014 |
| | CHES-RW-1 | RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002 |
| | ESS-RW-1 | RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000 |
| | | ACTIVE MONITORING WELLS |
| | | DECOMMISSIONED OR DESTROYED MONITORING WELLS (PRE-2017) |
| | | 2016 DECOMMISSIONED MONITORING WELLS |
| | | TEMPORARY MONITORING WELL-ASSUMED DESTROYED |
| | | RECOVERY WELLS |
| | 5 | SHALLOW GROUNDWATER ELEVATION CONTOUR (NAVD 1988) ON MAY 18, 2016. |
| | 4 | INFERRED SHALLOW GROUNDWATER ELEVATION CONTOUR (NAVD 1988) ON MAY 18, 2016. |
| | 2.93S | GROUNDWATER ELEVATION OBSERVED ON MAY 18, 2016 (IN FEET RELATIVE TO NAVD 1988 MSL) |
| | 2.56D | GROUNDWATER ELEVATION OBSERVED ON MAY 18, 2016 (IN FEET RELATIVE TO NAVD 1988 MSL) |
| | S | INDICATES THE MONITORING WELL SCREEN IS SHALLOW |
| | D | INDICATES THE MONITORING WELL SCREEN IS DEEP |

GENERAL NOTES:

- EXISTING CONDITIONS BASE MAP DEVELOPED FROM THE FOLLOWING:
 - ELECTRONIC CAD FILE "ACAD-7257PL.DWG" PROVIDED BY VANASSE HANGEN BRUSTLIN (VHB) ENTITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. SV-1 THROUGH SV-3 AND AERIAL MAPPING BY WSP TRANSPORTATION AND INFRASTRUCTURE DATED JANUARY 15, 2014 PREPARED FOR NATIONAL GRID LAND SURVEYING DEPARTMENT, WALTHAM, MASSACHUSETTS AND CAD FILE NO. 09303023.052-1.DWG
 - ELECTRONIC CAD FILE "3654 642 ALLENS AVE ASBUILT.DWG", PREPARED BY A-PLUS CONSTRUCTION SERVICES CORPORATION FOR CHARTER ENVIRONMENTAL, TITLED "AS-BUILT PLAN," SHEET 1 TITLED "SUB GRADE" AND SHEET 2 TITLED "FINISH GRADE," DATED DECEMBER 16, 2016 AND PROVIDED TO GZA ON MARCH 23, 2017
 - ELECTRONIC CAD FILE 2797-001-DATA-V18-20191204 TITLED "TOPOGRAPHIC SURVEY". PROJECT TITLE "642 ALLENS AVENUE. ANCILLARY BUILDING DEMOLITION PROJECT" PREPARED BY DIPRETE ENGINEERING FOR COSTELLO DISMANTLING COMPANY, INC., ORIGINAL SCALE 1" = 20'. SHEET 1 OF 1, DATED DECEMBER 4, 2019 AND PROVIDED TO GZA.
 - ELECTRONIC CAD FILE "19-NG-20_TERMINAL-RD PROVIDENCE.DWG." PREPARED BY TAUPER LAND SURVEY, INC. ON DECEMBER 30, 2019 FOR NATIONAL GRID LAND SURVEYING DEPARTMENT, WALTHAM, MASSACHUSETTS.
 - ELECTRONIC CAD FILE "NATIONAL GRID LNG FINAL AS-BLT", PREPARED BY LYNCH AND PROVIDED TO GZA.
 - ELECTRONIC CAD FILE WA216268_EX01_LINEWORK.DWG, TITLED "GPRS UTILITY FINDINGS MAP", PREPARED BY GPRS, INC. FOR GZA, DATED 9/10/2020. ORIGINAL SCALE 1" = 25'.
 - ELECTRONIC CAD FILE ALLENSAVEOUTLET.DWG, TITLED "ABANDONMENT OF ALLENS AVE PIPING", SHEET 2 OF 2, PREPARED BY SGC ENGINEERING, LLC FOR NATIONAL GRID ON APRIL 4, 2022, ORIGINAL SCALE 1"=10'.
 - ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2020.
- PROPERTY LINES AND LOT INFORMATION ESTABLISHED FROM INFORMATION PROVIDED ON A DRAWING ENTITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. SV-1 THROUGH SV-3.
- EXPLORATION LOCATION PLANS WERE DEVELOPED FROM THE FOLLOWING:
 - SITE PLANS PROVIDED BY RESOURCE CONTROLS ASSOCIATES (RCA) IN THE RIDEM-SUBMITTED JULY 5, 1994 "SITE CHARACTERIZATION PLAN" PREPARED ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - SITE PLANS PROVIDED BY RCA IN THE RIDEM-SUBMITTED JUNE 28, 1996 "PHASE IB FIELD CHARACTERIZATION INVESTIGATION" PREPARED ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - SITE PLANS PROVIDED BY ENVIRONMENTAL SCIENCE SERVICES, INC. (ESS) IN THE RIDEM-SUBMITTED DECEMBER 4, 1998 "REMEDIAL ACTION WORK PLAN (RAWP)" PREPARED ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - SITE PLANS PROVIDED BY ESS IN THE RIDEM-SUBMITTED OCTOBER 21, 1999 "SUBSURFACE INVESTIGATION AND PROPOSED ALGONQUIN GENERATOR CONSTRUCTION AREA" PREPARED ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - SITE PLANS PROVIDED BY VHB IN THE RIDEM-SUBMITTED NOVEMBER 2002 "REMEDIAL ACTION CLOSURE REPORT" PREPARED ON BEHALF OF THE NEW ENGLAND GAS COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - SITE PLANS PROVIDED BY VHB IN THE RIDEM-SUBMITTED APRIL 2003 "SITE INVESTIGATION REPORT" PREPARED ON BEHALF OF THE NEW ENGLAND GAS COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - SITE PLANS PROVIDED BY VHB IN THE RIDEM-SUBMITTED JANUARY 26, 2009 "OXIDE BOX INVESTIGATION TECHNICAL MEMORANDUM" PREPARED ON BEHALF OF THE NARRAGANSETT ELECTRIC COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - FIGURE 3 "EXPLORATION LOCATION PLAN" PREPARED BY GZA (GZA) ON BEHALF OF CHICAGO BRIDGE AND IRON (CB&I) IN JULY 2005. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - FIGURE 35 "TEST BORINGS UNDER SASSAFRAS POINT PLAT" DATED JUNE 5, 1912 PREPARED BY THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - DRAWING 3 "WHARF FACILITIES - BULKHEAD REBUILDING - CROSS SECTIONS" DATED JANUARY 11, 1973 PREPARED BY PARSONS, BRINCKERHOFF, QUADE AND DOUGLAS ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - FIGURE 2 "EXPLORATION LOCATION PLAN," DATED SEPTEMBER 18, 2015, BY WEIDLINGER ASSOCIATES, INC. (WEI) ON BEHALF OF KIEWIT CORPORATION (KIEWIT). PLAN PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - DRAWING A03 DATED JANUARY 2015, BY PROCESS PIPELINE, INC. ON BEHALF OF THE NARRAGANSETT ELECTRIC COMPANY. PLAN PREPARED BY THE NARRAGANSETT ELECTRIC COMPANY.

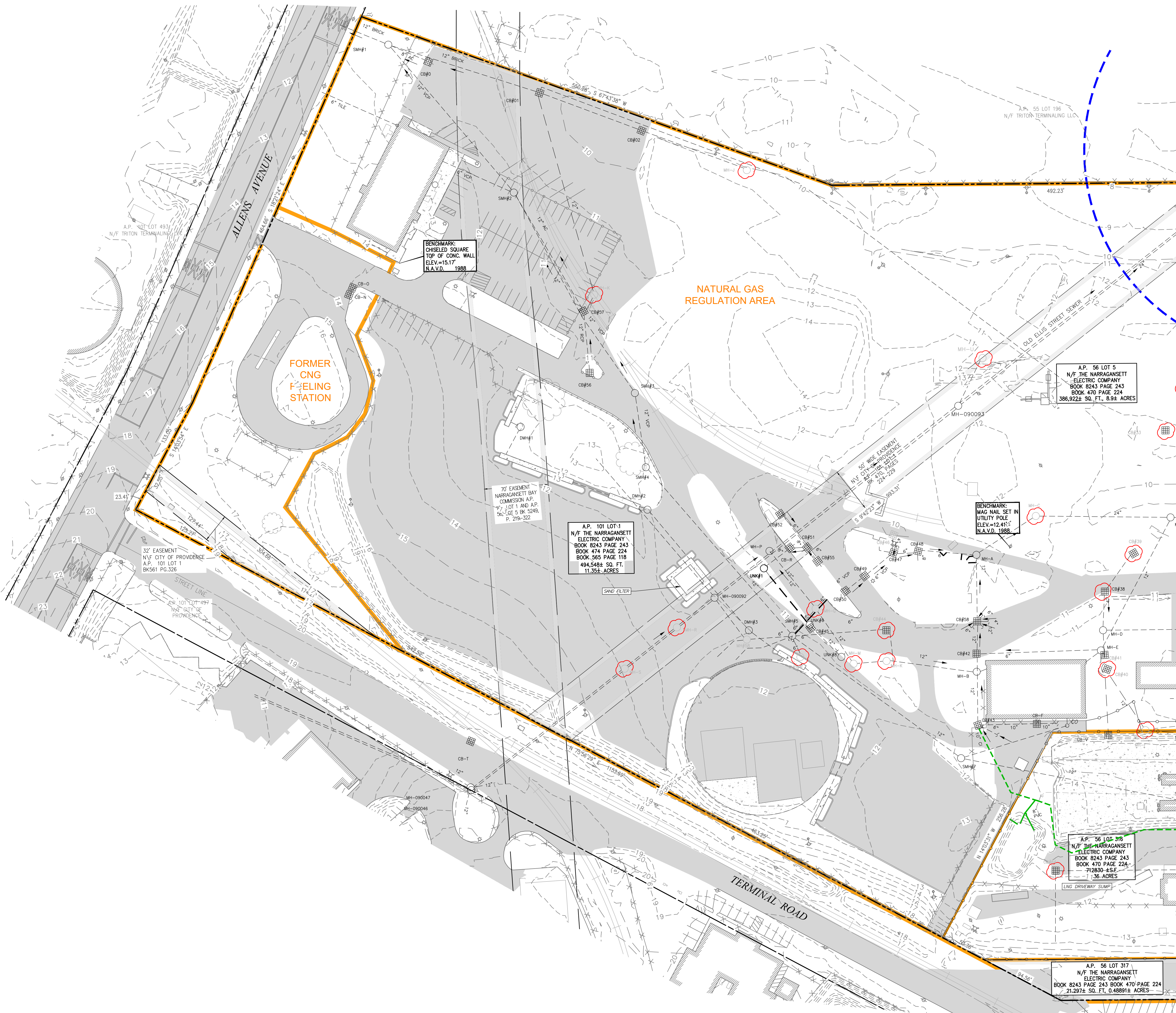
- DRAWING 2 "PROPOSED EXPLORATION LOCATION PLAN" DATED SEPTEMBER 2019, BY GZA ON BEHALF OF HDR, INC.
- DRAWING 5153_C00_SENT OUT 05-03-16) DWG BY PROCESS PIPELINE SERVICES OF WALPOLE MASSACHUSETTS TITLED "SITE PLAN" SHEET A02, DATED APRIL 27, 2016 AND PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY ON MAY 6, 2016.
- FIGURE 2 "EXPLORATION LOCATION PLAN," DATED MARCH 22, 2016, BY GOLDER ASSOCIATES ON BEHALF OF CHI ENGINEERING SERVICES, INC. PLAN PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
- ELECTRONIC CAD FILE "ACAD-7257PL.DWG" PROVIDED BY VANASSE HANGEN BRUSTLIN (VHB) ENTITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. SV-1 THROUGH SV-3 AND AERIAL MAPPING BY WSP TRANSPORTATION AND INFRASTRUCTURE DATED JANUARY 15, 2014 PREPARED FOR THE NARRAGANSETT ELECTRIC COMPANY LAND SURVEYING DEPARTMENT, WALTHAM, MASSACHUSETTS AND CAD FILE NO. 09303023.052-1.DWG. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
- ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2021.
- THE LOCATION OF THE EXPLORATIONS AND MONITORING WELLS AT THE SITE WERE APPROXIMATELY DETERMINED AND HAVE BEEN ALIGNED AND ADJUSTED FOR THE "BEST FIT" AND THESE DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
- HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY VHB.
- VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.
- EASEMENT LOCATIONS WERE DEVELOPED FROM THE FOLLOWING:
 - ELECTRONIC CAD FILE "ACAD-7257PL.DWG" PROVIDED BY VANASSE HANGEN BRUSTLIN (VHB) ENTITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. SV-1 THROUGH SV-3 AND AERIAL MAPPING BY WSP TRANSPORTATION AND INFRASTRUCTURE DATED JANUARY 15, 2014 PREPARED FOR NATIONAL GRID LAND SURVEYING DEPARTMENT, WALTHAM, MASSACHUSETTS AND CAD FILE NO. 09303023.052-1.DWG. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - DESCRIPTIONS PROVIDED IN THE CITY OF PROVIDENCE DEED BOOK (BK) 470 PAGES 224 - 229, BK 561 PAGES 326 - 328, BK 1111 PAGES 752 - 756 AND BK 5249 PAGES 219 - 322.
- SELECT PRESENTED SITE UTILITIES WERE TAKEN FROM HISTORIC FIGURES PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY. ALL UTILITY LOCATIONS ARE APPROXIMATE AND HAVE BEEN ALIGNED AND ADJUSTED FOR THE "BEST FIT" AND THESE DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED. UTILITIES ARE SHOWN FOR REFERENCE ONLY. OTHER LOCATIONS MAY EXIST.
- APPROXIMATE HISTORICAL STRUCTURE/EQUIPMENT LOCATIONS AND DATES WERE OBTAINED FROM THE FOLLOWING SOURCES:
 - CERTIFIED SANBORN MAPS DATED: 1950, 1956, 1972, 1977 AND 1982
 - AERIAL ORTHOPHOTOGRAPHIC IMAGES OBTAINED FROM RIGIS: 1939, 1951, 1962, 1972, 1976, 1981, 1988, 1992, 1995, 1997, 2002, 2008
 - SITE PLANS PROVIDED BY RESOURCE CONTROLS ASSOCIATES (RCA) IN THE RIDEM-SUBMITTED JULY 5, 1994 "SITE CHARACTERIZATION PLAN" PREPARED ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - HISTORIC SITE PLAN "GENERAL PLAN OF WORKS, PROVIDENCE GAS COMPANY, SASSAFRAS POINT PLANT, PROVIDENCE, RHODE ISLAND," UNDATED. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
- THE SITE HAS BEEN THE LOCATION OF NUMEROUS REMEDIAL ACTIONS (AS PRESENTED ON FIGURE 6). THIS PLAN SET DOES NOT PRESENT THE LOCATIONS OF ANY CONFIRMATORY SAMPLES THAT HAVE BEEN COLLECTED AT THE SITE. THIS PLAN SET MAY INCLUDE LOCATIONS THAT HAVE BEEN FULLY EXCAVATED AND THE PRESENTED EXPLORATIONS MAY NOT BE TRUE TO CURRENT CONDITIONS.
- THIS PLAN SET DOES NOT PRESENT THE LOCATIONS OF SAMPLES THAT WERE COLLECTED FOR GEOTECHNICAL PURPOSES ONLY. THIS INCLUDES CONE PENETROMETER TESTING SAMPLES AND TEST PITS CONDUCTED WITH NO SOIL DESCRIPTIONS OR ENVIRONMENTAL SAMPLES COLLECTED. HOWEVER, THE LOCATIONS OF KNOWN GEOTECHNICAL BORINGS (PRESENTED ON PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY) ARE PRESENTED IN THIS PLAN SET.
- LOGS FROM GEOTECHNICAL BORINGS SERIES PGC (1912 GEOTECHNICAL BORINGS PERFORMED FOR THE PROVIDENCE GAS COMPANY) AND SERIES B (1973 GEOTECHNICAL BORINGS PERFORMED FOR THE PROVIDENCE GAS COMPANY) CONSIST OF FENCE DIAGRAMS ONLY.

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THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

| | | | |
|--|--|--|---|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | | | |
| GENERAL NOTES AND LEGEND | | | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | PREPARED FOR: Rhode Island Energy www.risenergy.com | | |
| PROJ MGR: SH DESIGNED BY: SH DATE: DECEMBER 2023 | REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO. 33554.01 | CHECKED BY: JJC SCALE: AS NOTED REVISION NO. 0 | FIGURE <div style="font-size: 2em; font-weight: bold; text-align: center;">2</div> SHEET NO. 2 OF 12 |

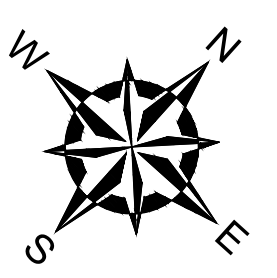
2023 - GZA GeoEnvironmental, Inc. GZA-VA-EPA-33554.01-SN-FIGURES-CAD-DWG-33554.01-SITE INVESTIGATION REPORT - ADDENDUM 3 - 33554.01 - CONC-EC-FIG 3 - DECEMBER 1, 2023 12:28 PM USA THERMAL



- LEGEND:**
- PROPERTY LINE
 - INTERIOR PROPERTY LINE
 - EASEMENT AREA
 - EXISTING BUILDING
 - UTILITY POLE
 - LIGHT POLE
 - UTILITY POLE WITH LIGHT
 - CATCH BASIN FRAME AND GRATE
 - STEEL POST
 - MANHOLE
 - HYDRANT
 - SEPTIC VENT
 - STRUCTURE NOT FOUND / DECOMMISSIONED
 - EXISTING TREE
 - EDGE OF WATER
 - EXISTING FENCE
 - LNG DOUBLE SECURITY FENCE
 - EXISTING GUARDRAIL
 - RAILROAD TRACKS
 - EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
 - EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
 - CURRENT OPERATIONS/SITE AREA BOUNDARY
 - EXISTING PAVEMENT
 - EXISTING CONCRETE
 - EXISTING RIP RAP
 - 200 FOOT CRMC SETBACK
 - EXISTING FORCE MAIN (ABOVE GROUND)
 - EXISTING FORCE MAIN (BELOW GROUND)
 - OLD ELLIS STREET SEWER DRAIN LINE
 - SEWER AND STORM DRAIN & ACTIVE STRUCTURES

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

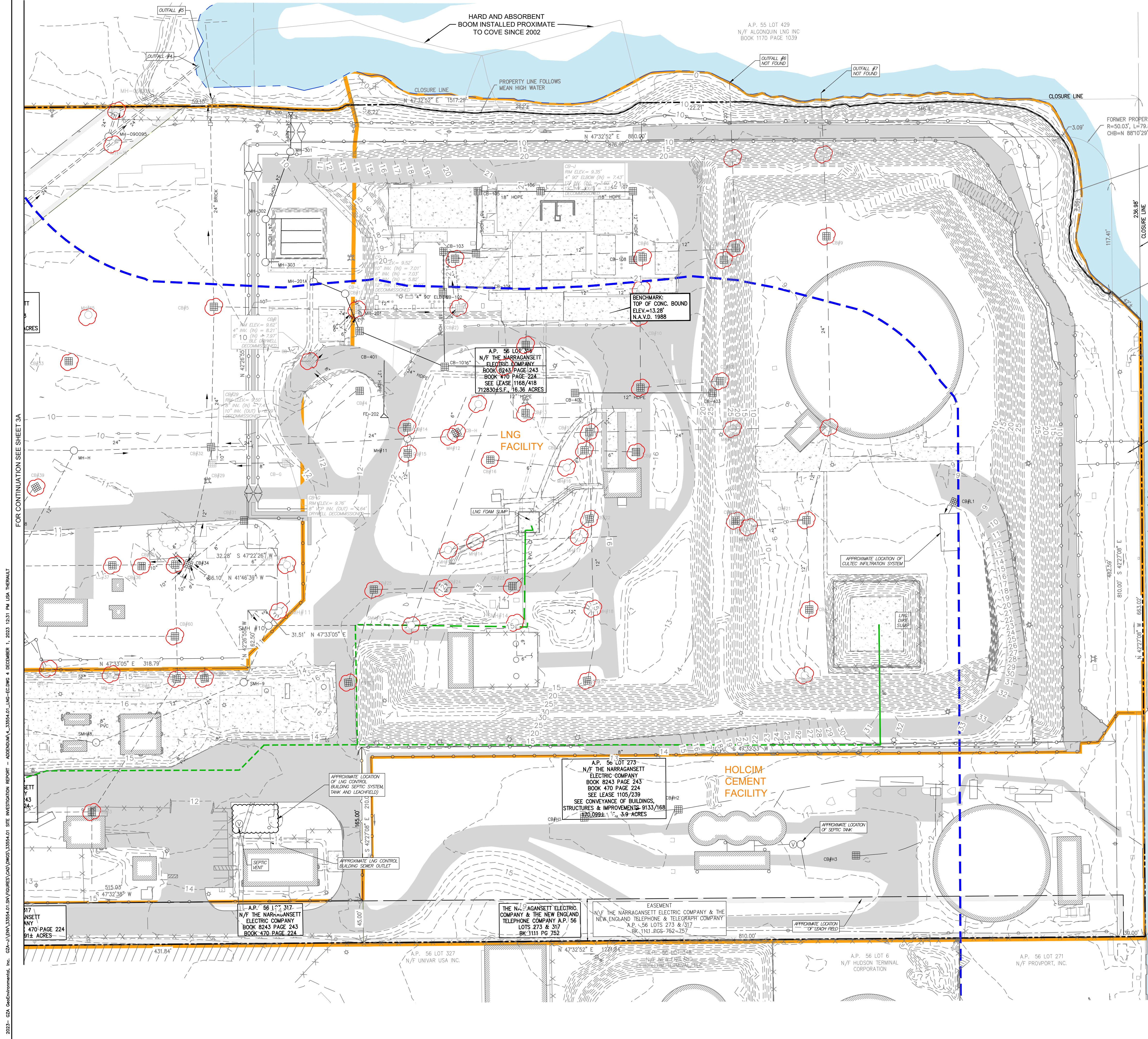
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THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

| | | | |
|---|--|---|---|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | | | |
| EXISTING CONDITIONS PLAN - WESTERN SIDE OF THE SITE | | | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | PREPARED FOR: Rhode Island Energy www.rienergy.com | | |
| PROJ MGR: SH DESIGNED BY: SH DATE: DECEMBER 2023 | REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO.: 33554.01 | CHECKED BY: JJC SCALE: AS NOTED REVISION NO.: 0 | FIGURE 3A SHEET NO. 3 OF 12 |

FOR CONTINUATION SEE SHEET 3B



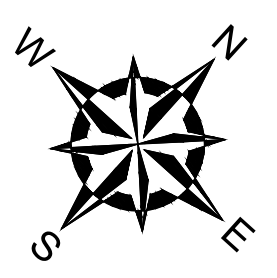
- LEGEND:**
- PROPERTY LINE
 - INTERIOR PROPERTY LINE
 - EASEMENT AREA
 - EXISTING BUILDING
 - UTILITY POLE
 - LIGHT POLE
 - UTILITY POLE WITH LIGHT
 - CATCH BASIN FRAME AND GRATE
 - STEEL POST
 - MANHOLE
 - HYDRANT
 - SEPTIC VENT
 - STRUCTURE NOT FOUND / DECOMMISSIONED
 - EXISTING TREE
 - EDGE OF WATER
 - EXISTING FENCE
 - LNG DOUBLE SECURITY FENCE
 - EXISTING GUARDRAIL
 - RAILROAD TRACKS
 - EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
 - EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
 - CURRENT OPERATIONS/SITE AREA BOUNDARY
 - EXISTING PAVEMENT
 - EXISTING CONCRETE
 - EXISTING RIP RAP
 - 200 FOOT CRMC SETBACK
 - EXISTING FORCE MAIN (ABOVE GROUND)
 - EXISTING FORCE MAIN (BELOW GROUND)
 - OLD ELLIS STREET SEWER DRAIN LINE
 - SEWER AND STORM DRAIN & ACTIVE STRUCTURES

PROVIDENCE RIVER

Flood
↓
Ebb

THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

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ISSUED FOR REVIEW

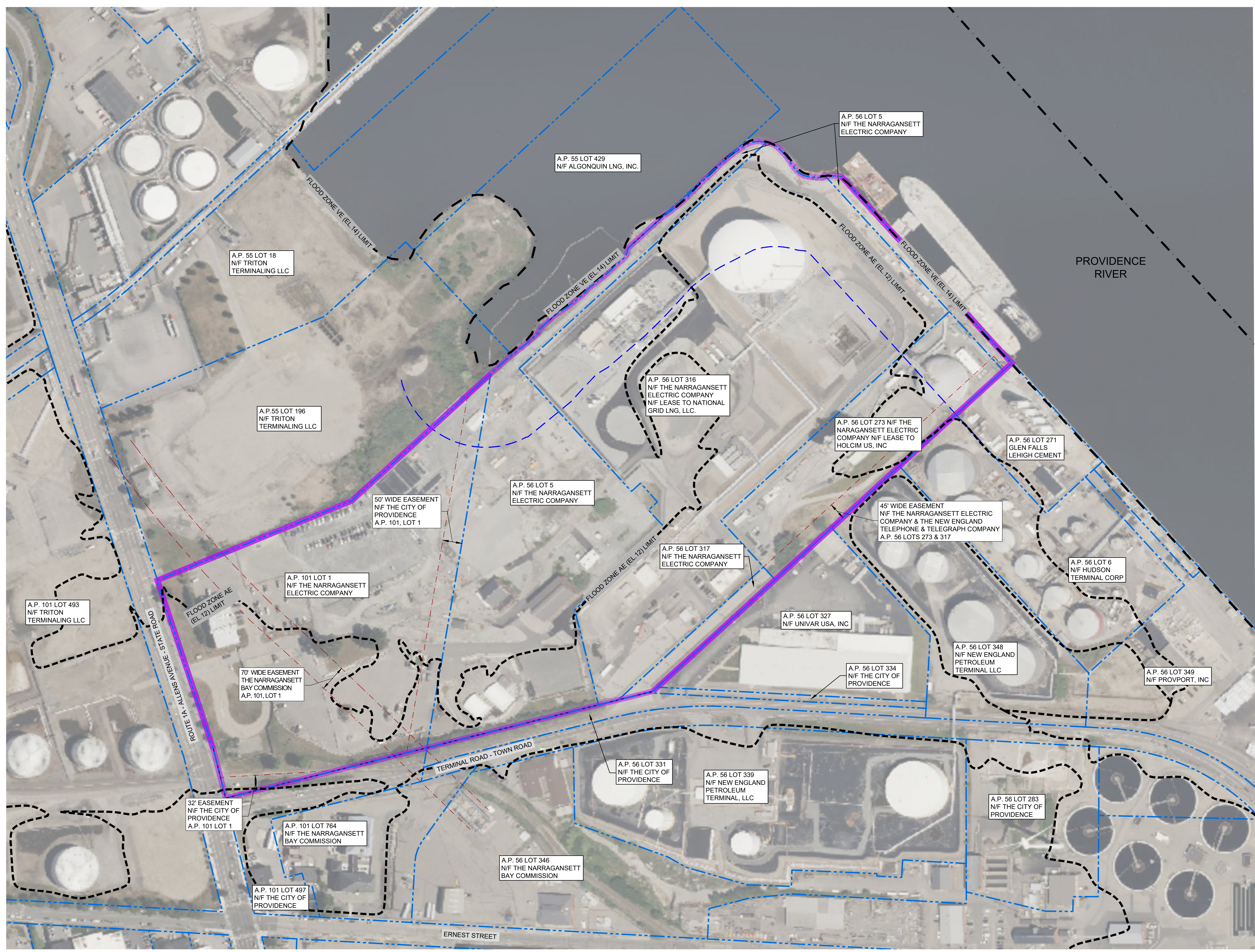


THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (NEEC) OR THE NEEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND NEEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND NEEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND NEEC.

| | | | |
|--|---|--|--|
| <p>SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND</p> <p>EXISTING CONDITIONS PLAN - EASTERN SIDE OF THE SITE</p> | | | |
| <p>PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p> | <p>PREPARED FOR: Rhode Island Energy</p> | | |
| <p>PROJ MGR: SH DESIGNED BY: SH DATE: DECEMBER 2023</p> | <p>REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO.: 33554.01</p> | <p>CHECKED BY: JJC SCALE: AS NOTED REVISION NO.: 0</p> | <p>FIGURE 3B SHEET NO. 4 OF 12</p> |

2023 - GZA GeoEnvironmental, Inc. GZA-VA-ENV-33554.01-SITE INVESTIGATION REPORT - ADDENDUM 3, 33554.01_LIN-EC-DRG-4 DECEMBER 1, 2023 12:31 PM USA THERMAL
 FOR CONTINUATION SEE SHEET 3A
 317 NSETT A.P. 56 LOT 274 N/F THE NARRAGANSETT ELECTRIC COMPANY A.P. 470 PAGE 224 91± ACRES
 317 NSETT A.P. 56 LOT 317 N/F THE NARRAGANSETT ELECTRIC COMPANY A.P. 470 PAGE 224 91± ACRES
 THE NARRAGANSETT ELECTRIC COMPANY & THE NEW ENGLAND TELEPHONE COMPANY A.P. 56 LOTS 273 & 317 BK 1111 PG 752
 EASEMENT N/F THE NARRAGANSETT ELECTRIC COMPANY & THE NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY A.P. 56 LOTS 273 & 317 BK 1111 PGS 762-757
 A.P. 56 LOT 273 N/F THE NARRAGANSETT ELECTRIC COMPANY BOOK 8243 PAGE 243 BOOK 470 PAGE 224 SEE LEASE 1105/239 SEE CONVEYANCE OF BUILDINGS, STRUCTURES & IMPROVEMENTS 9133/168 #70,098± ± 3.9 ACRES
 A.P. 56 LOT 316 N/F THE NARRAGANSETT ELECTRIC COMPANY BOOK 8243 PAGE 243 BOOK 470 PAGE 224 SEE LEASE 1168/418 712830±±± 16.36 ACRES
 A.P. 56 LOT 346 N/F THE NARRAGANSETT ELECTRIC COMPANY BOOK 8243 PAGE 243 BOOK 470 PAGE 224 SEE LEASE 1168/418 712830±±± 16.36 ACRES
 A.P. 55 LOT 429 N/F ALCONQUIN LNG INC BOOK 1170 PAGE 1039
 A.P. 56 LOT 327 N/F UNIVAR USA INC.
 A.P. 56 LOT 6 N/F HUDSON TERMINAL CORPORATION
 A.P. 56 LOT 271 N/F PROVPORT, INC.

2023- GZA - Environmental, Inc. GZA-VA-DMA-33554-01 SITE INVESTIGATION REPORT - ADDRESS: 642 ALLENS AVENUE, PROVIDENCE, RI 02840. DATE: 12/23/2023. 12:23 PM. LCA. THERMAL.



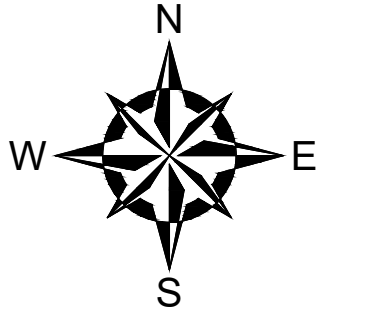
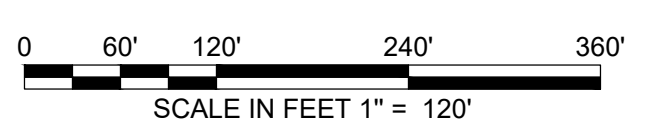
LEGEND:

- PROPERTY LINES
- 642 ALLENS AVENUE FORMER MGP SITE BOUNDARY
- CRMC 200-FOOT JURISDICTIONAL LINE
- EASEMENT AREA
- FLOOD ZONE VE (EL. 14) LIMIT
- FLOOD ZONE AE (EL. 12) LIMIT

REFERENCE NOTES:

1. BASE MAP DEVELOPED FROM RHODE ISLAND'S RIGIS AERIAL IMAGERY FLOWN IN SPRING 2021.
2. PROPERTY LINES AND LOT INFORMATION ESTABLISHED FROM INFORMATION PROVIDED ON A DRAWING ENTITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. SV-1 THROUGH SV-3.
3. EASEMENT LOCATIONS WERE DEVELOPED FROM THE FOLLOWING:
 - ELECTRONIC CAD FILE "ACAD-7257PL.DWG" PROVIDED BY VANASSE HANGEN BRUSTLIN (VHB) ENTITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. SV-1 THROUGH SV-3 AND AERIAL MAPPING BY WSP TRANSPORTATION AND INFRASTRUCTURE DATED JANUARY 15, 2014 PREPARED FOR NATIONAL GRID LAND SURVEY DEPARTMENT, WALTHAM, MASSACHUSETTS AND CAD FILE NO. 09303023.052-1.DWG. PLANS PROVIDED BY THE NARRAGANSETT ELECTRIC COMPANY.
 - DESCRIPTIONS PROVIDED IN THE CITY OF PROVIDENCE DEED BOOK (BK) 470 PAGES 224 - 229, BK 561 PAGES 326 - 328, BK 1111 PAGES 752 - 756 AND BK 5249 PAGES 219 - 322.
4. FLOOD ZONE HAZARD AREA DATA WERE PROVIDED BY RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS) AND DERIVED FROM STATEWIDE DIGITAL FLOOD INSURANCE RATE MAP (DFIRM) DATABASE, ORIGINALLY PUBLISHED BY FEMA IN OCTOBER 2015.
5. SITE BOUNDARIES ARE APPROXIMATE.

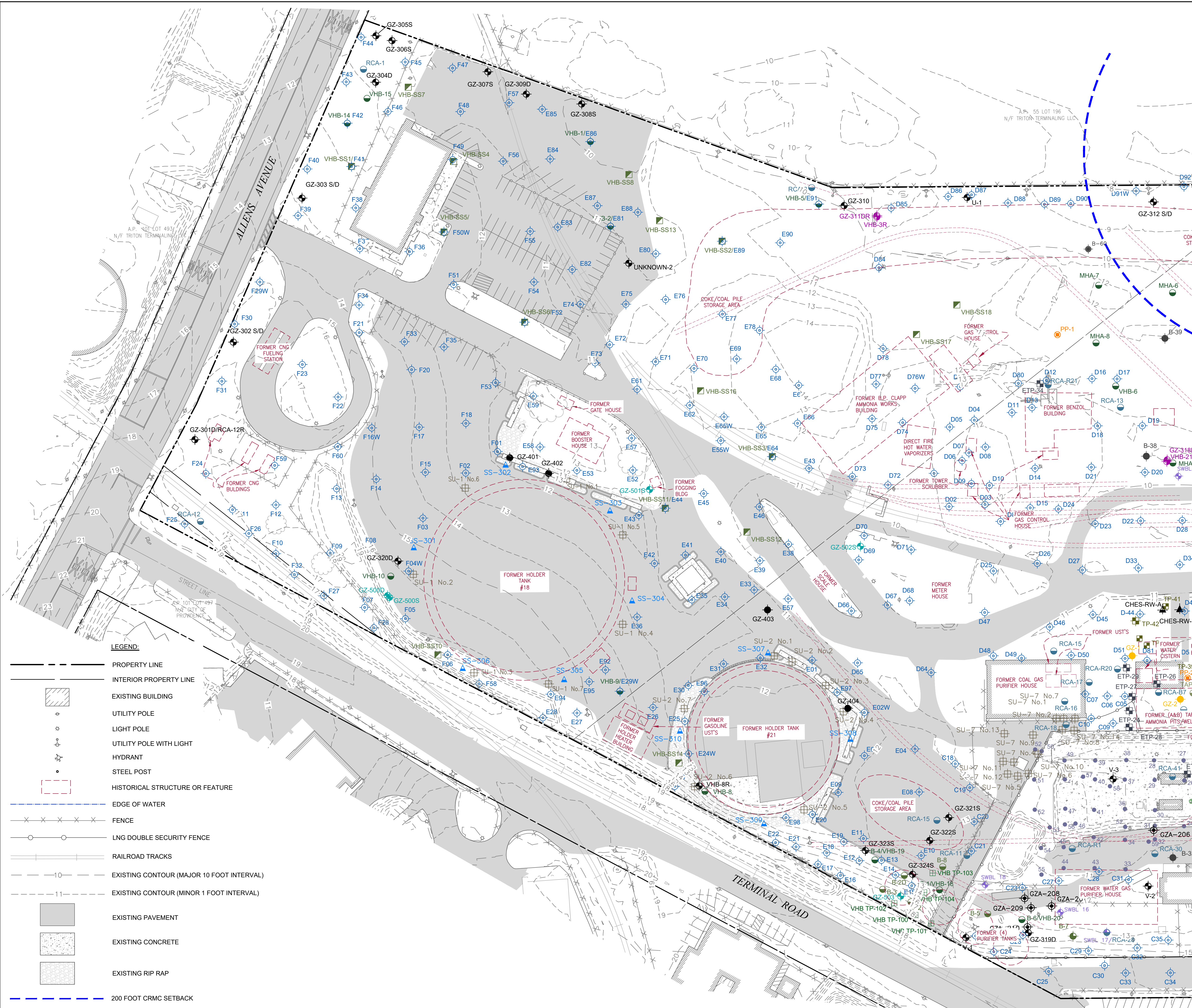
**DRAFT COPY
ISSUED FOR REVIEW**



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| | | | |
|--|---|---|--|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | | | |
| OVERALL AERIAL | | | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | PREPARED FOR: Rhode Island Energy www.rienergy.com | | |
| PROJ MGR: SH DESIGNED BY: SH DATE: DECEMBER 2023 | REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO.: 33554.01 | CHECKED BY: JJC SCALE: AS NOTED REVISION NO.: 0 | FIGURE 4 SHEET NO. 5 OF 12 |

2023 - GZA GeoEnvironmental, Inc. GZA-VA-ENV-33554.01 SITE INVESTIGATION REPORT - ADDENDUM A-33554.01 CON-EXP.DWG 6 DECEMBER 1, 2023 11:10 AM USA THERMAL



- EXPLORATION LEGEND:**
- GZ-313DR REPLACEMENT MONITORING WELL OBSERVED BY GZA IN 2023
 - GZ-500 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021
 - GZ-401 ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015
 - GZ-314 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014
 - VHB-7 ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003
 - F47 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000
 - 1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999
 - RHB-1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998
 - RCA-40 ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996
 - TP-301 ENVIRONMENTAL TEST PITS OBSERVED BY GZA IN 2014
 - VHB TP-101 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
 - TP-39 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
 - ETP-4 ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996
 - SS-301 SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014
 - VHB-SS2 SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003
 - SU-6 No.9 SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995
 - RSS-1 SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995
 - CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
 - RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
 - CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
 - ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
 - PRV-1 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019
 - B-211 GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016
 - GZ-3 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016
 - PP-2 GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015
 - SB-01 GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WA) IN 2015
 - GZA-206 GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
 - GZ-1 GEOTECHNICAL BORING OBSERVED BY GZA IN 2004
 - SWBL13 GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995
 - B-207 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973
 - B-25 GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972
 - PGC-8 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912
 - W155 CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999

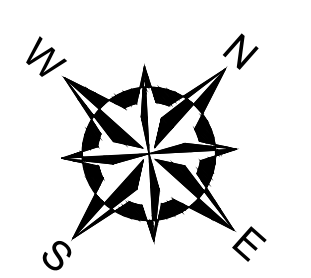
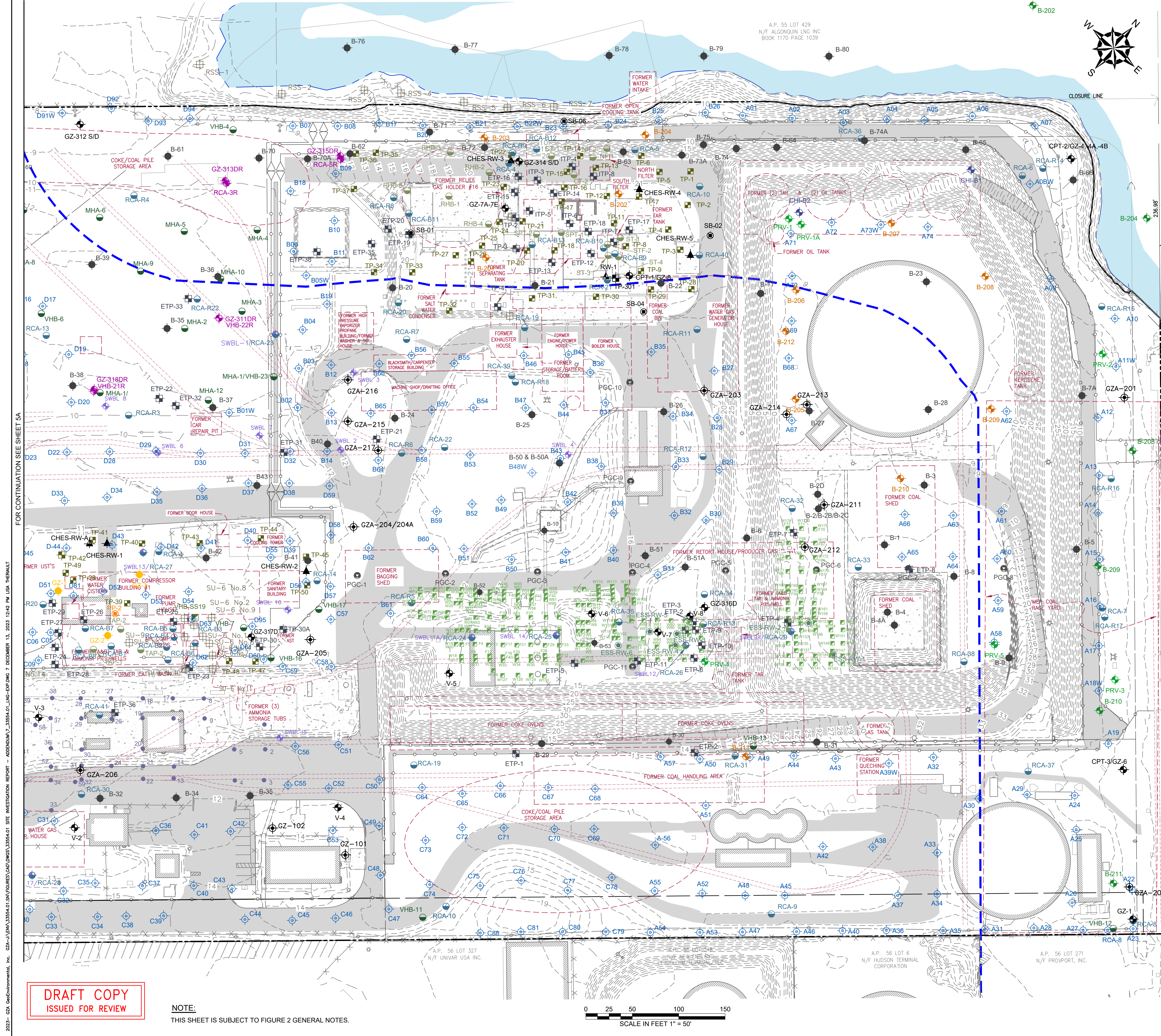
NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

- LEGEND:**
- PROPERTY LINE
 - INTERIOR PROPERTY LINE
 - EXISTING BUILDING
 - UTILITY POLE
 - LIGHT POLE
 - UTILITY POLE WITH LIGHT
 - HYDRANT
 - STEEL POST
 - HISTORICAL STRUCTURE OR FEATURE
 - - - - - EDGE OF WATER
 - FENCE
 - LNG DOUBLE SECURITY FENCE
 - RAILROAD TRACKS
 - - - - - EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
 - - - - - EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
 - EXISTING PAVEMENT
 - EXISTING CONCRETE
 - EXISTING RIP RAP
 - - - - - 200 FOOT CRMC SETBACK

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| | |
|---|---|
| <p>SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND</p> | |
| <p>EXPLORATION LOCATION PLAN - WESTERN SIDE OF THE SITE</p> | |
| <p>PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p> | <p>PREPARED FOR: Rhode Island Energy RIS Energy</p> |
| <p>PROJ MGR: SH DESIGNED BY: SH DATE: DECEMBER 2023</p> | <p>REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO: 33554.01</p> |
| <p>CHECKED BY: JJC SCALE: AS NOTED REVISION NO: 0</p> | <p>FIGURE 5A SHEET NO. 6 OF 12</p> |



EXPLORATION LEGEND:

- GZ-313DR ● REPLACEMENT MONITORING WELL OBSERVED BY GZA IN 2023
- GZ-500 S/D ● ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021
- GZ-401 ● ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015
- GZ-314 S/D ● ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014
- VHB-7 ● ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003
- F47 ● ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000
- 1 ● ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999
- RHB-1 ● ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998
- RCA-40 ● ENVIRONMENTAL BORING TEST OBSERVED BY RCA BETWEEN 1994-1996
- TP-301 ● ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2014
- VHB TP-101 ● ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
- TP-39 ● ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
- ETP-4 ● ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996
- SS-301 ▲ SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014
- VHB-SS2 ▲ SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003
- SU-6 No.9 ▲ SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995
- RSS-1 ▲ SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995
- CHES-RW-A ▲ RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
- RW-1 ▲ RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
- CHES-RW-1 ▲ RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
- ESS-RW-1 ● RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
- PRV-1 ● GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019
- B-211 ● GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016
- GZ-3 ● GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016
- PP-2 ● GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015
- SB-01 ● GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WAI) IN 2015
- GZA-206 ● GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
- GZ-1 ● GEOTECHNICAL BORING OBSERVED BY GZA IN 2004
- SWBL13 ● GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995
- B-207 ● GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973
- B-25 ● GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972
- PGC-8 ● GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912
- W155 ● CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999

LEGEND:

- PROPERTY LINE
- INTERIOR PROPERTY LINE
- ▨ EXISTING BUILDING
- UTILITY POLE
- UTILITY POLE WITH LIGHT
- LIGHT POLE
- HYDRANT
- STEEL POST
- ▭ HISTORICAL STRUCTURE OR FEATURE
- EDGE OF WATER
- FENCE
- RAIL DOUBLE SECURITY FENCE
- RAILROAD TRACKS
- EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- ▭ EXISTING PAVEMENT
- ▭ EXISTING CONCRETE
- 200 FOOT CRMC SETBACK

PROVIDENCE RIVER

Flood
Ebb

PROVIDENCE RIVER

EXPLORATION LOCATION PLAN - EASTERN SIDE OF THE SITE

SIR ADDENDUM
642 ALLENS AVENUE
PROVIDENCE, RHODE ISLAND

PREPARED BY: **GZA GeoEnvironmental, Inc.**
Engineers and Scientists
www.gza.com

PREPARED FOR: **Rhode Island Energy**
www.rhodeislandenergy.com

PROJ MGR: SH REVIEWED BY: MSK CHECKED BY: JJC
DESIGNED BY: SH DRAWN BY: LTD SCALE: AS NOTED
DATE: DECEMBER 2023 PROJECT NO. 33554.01 REVISION NO. 0

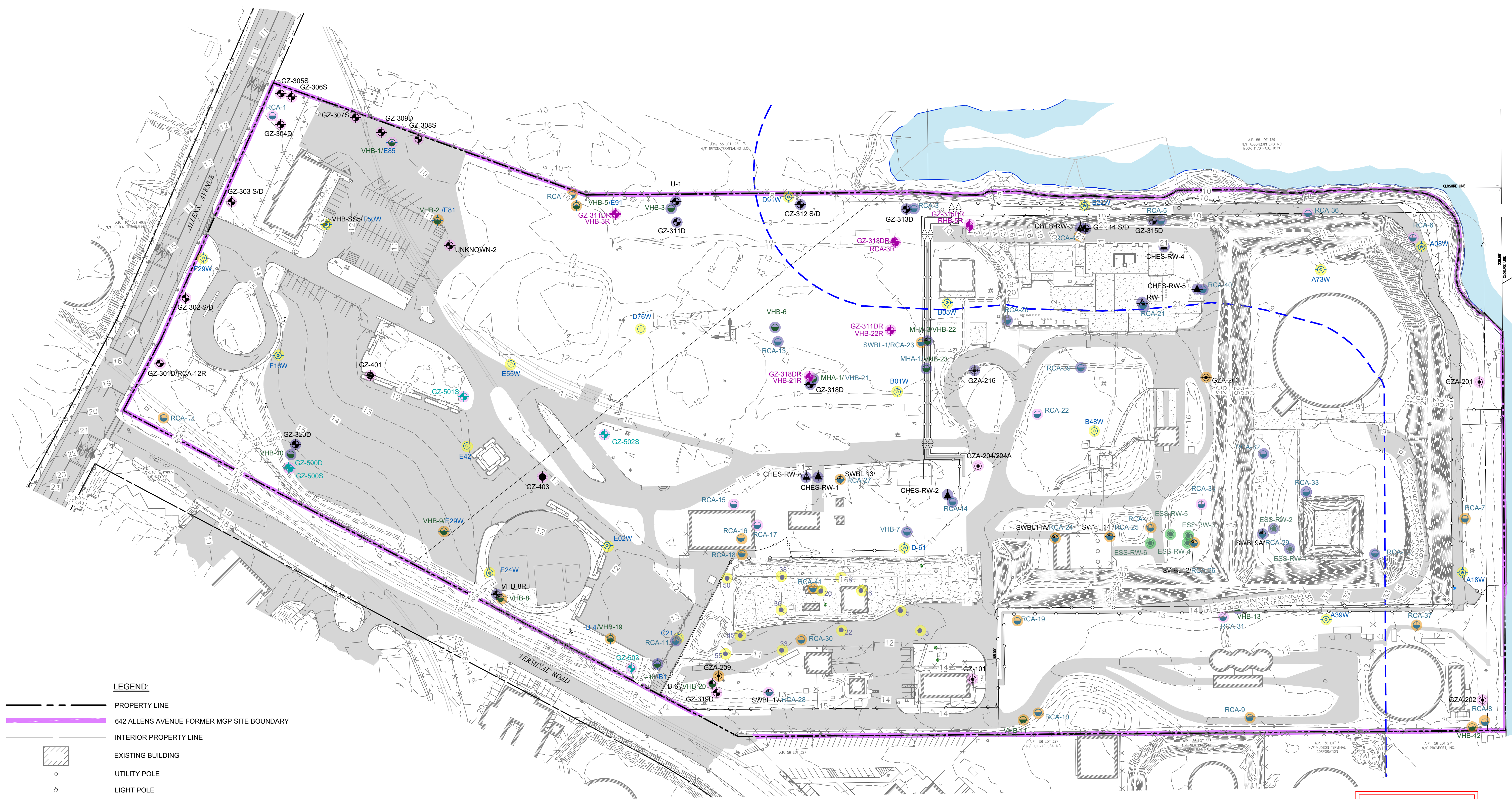
FIGURE 5B
SHEET NO. 7 OF 12

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NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.



2023 - GZA GeoEnvironmental, Inc. GZA-VA-EPA-33554.01-SITE INVESTIGATION REPORT - ADDENDUM 6 - 33554.01 - 12/23/23 12:39 PM USA THERMAL



LEGEND:

- PROPERTY LINE
- 642 ALLENS AVENUE FORMER MGP SITE BOUNDARY
- INTERIOR PROPERTY LINE
- EXISTING BUILDING
- UTILITY POLE
- LIGHT POLE
- UTILITY POLE WITH LIGHT
- HYDRANT
- STEEL POST
- EDGE OF WATER
- FENCE
- LNG DOUBLE SECURITY FENCE
- RAILROAD TRACKS
- EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- EXISTING PAVEMENT
- EXISTING CONCRETE
- EXISTING RIP RAP
- 200 FOOT CRMC SETBACK

MONITORING WELL LEGEND:

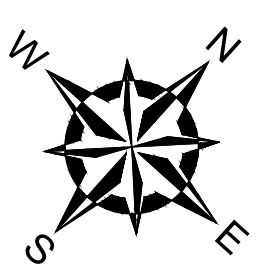
- GZ-313DR REPLACEMENT MONITORING WELL OBSERVED BY GZA IN 2023
- GZ-500 S/D MONITORING WELL INSTALLED BY GZA IN 2021
- GZ-401 MONITORING WELL INSTALLED BY GZA IN 2015
- GZ-314 S/D MONITORING WELL INSTALLED BY GZA IN 2014
- GZA-206 MONITORING WELL INSTALLED BY GZA IN 2005
- VHB-7 MONITORING WELL INSTALLED BY VHB IN 2002 AND 2003
- F47 TEMPORARY WELL POINT INSTALLED BY ESS IN 1999 AND 2000
- 1 TEMPORARY WELL POINT INSTALLED BY ESS IN 1999
- RCA-40 MONITORING WELL INSTALLED BY ESS IN 1996
- RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
- CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
- ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
- CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017

MONITORING WELL LEGEND CONTINUED:

- ACTIVE MONITORING WELLS
- DECOMMISSIONED OR DESTROYED MONITORING WELLS (PRE-2016)
- 2016 DECOMMISSIONED MONITORING WELLS
- TEMPORARY MONITORING WELL-ASSUMED DESTROYED
- RECOVERY WELLS

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

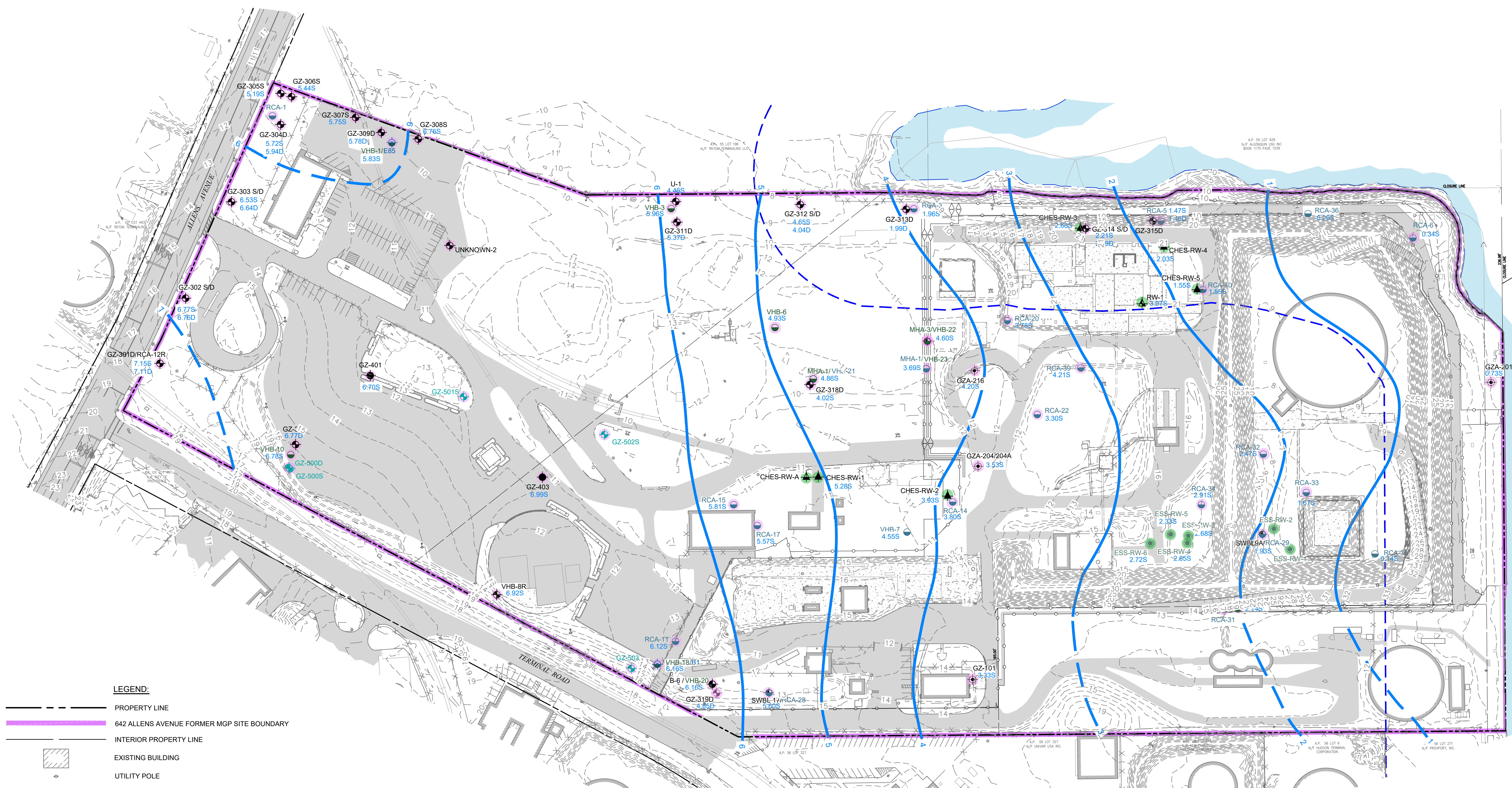
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| | | | |
|---|---|--|---|
| <p>SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND</p> | | | |
| <p>GROUNDWATER MONITORING WELLS</p> | | | |
| <p>PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p> | | <p>PREPARED FOR: Rhode Island Energy RIE.com</p> | |
| <p>PROJ MGR: SH DESIGNED BY: SH DATE: DECEMBER 2023</p> | <p>REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO.: 33554.01</p> | <p>CHECKED BY: JJC SCALE: AS NOTED REVISION NO.: 0</p> | <p>FIGURE 6A SHEET NO. 8 OF 12</p> |

2023 - GZA GeoEnvironmental, Inc. GZA-VA-15054.01-SW-FIGURES-CAD-DWG-33554-01 SITE INVESTIGATION REPORT - ADDENDUM 3 - 33554-01.DWG CONTOURS.DWG 8 DECEMBER 1, 2023 11:02 AM LISA THERIAULT



LEGEND:

- PROPERTY LINE
- 642 ALLENS AVENUE FORMER MGP SITE BOUNDARY
- INTERIOR PROPERTY LINE
- EXISTING BUILDING
- UTILITY POLE
- LIGHT POLE
- UTILITY POLE WITH LIGHT
- HYDRANT
- STEEL POST
- EDGE OF WATER
- FENCE
- LNG DOUBLE SECURITY FENCE
- RAILROAD TRACKS
- EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- EXISTING PAVEMENT
- EXISTING RIP RAP
- EXISTING CONCRETE
- 200 FOOT CRMC SETBACK

MONITORING WELL LEGEND:

- GZ-500 S/D MONITORING WELL INSTALLED BY GZA IN 2021
- GZ-401 MONITORING WELL INSTALLED BY GZA IN 2015
- GZ-314 S/D MONITORING WELL INSTALLED BY GZA IN 2014
- GZA-206 MONITORING WELL INSTALLED BY GZA IN 2005
- VHB-7 MONITORING WELL INSTALLED BY VHB IN 2002 AND 2003
- F47 TEMPORARY WELL POINT INSTALLED BY ESS IN 1999 AND 2000
- 1 TEMPORARY WELL POINT INSTALLED BY ESS IN 1999
- RCA-40 MONITORING WELL INSTALLED BY ESS IN 1996
- RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
- CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
- ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
- CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
- 2.93S GROUNDWATER ELEVATION OBSERVED ON MAY 18, 2016 (IN FEET RELATIVE TO NAVD 1988)
- 2.56D
- S INDICATES THE MONITORING WELL SCREEN IS SHALLOW
- D INDICATES THE MONITORING WELL SCREEN IS DEEP

MONITORING WELL LEGEND CONTINUED:

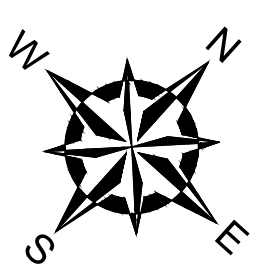
- MONITORING WELLS
- RECOVERY WELLS
- 5 SHALLOW GROUNDWATER ELEVATION CONTOUR (NAVD 1988) ON MAY 18, 2016
- 4 INFERRED SHALLOW GROUNDWATER ELEVATION CONTOUR (NAVD 1988) ON MAY 18, 2016

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

GROUNDWATER CONTOUR NOTES:

1. SHALLOW GROUNDWATER CONTOURS (NAVD 1988 MSL) ARE BASED ON DATA FROM WIDELY SPACED EXPLORATIONS AND MAY NOT REFLECT ACTUAL SUBSURFACE CONDITIONS. WATER LEVEL READINGS WERE ON MAY 18, 2016
2. WATER LEVEL READINGS HAVE BEEN MADE IN THE MONITORING WELLS AT THE TIMES AND UNDER THE CONDITIONS STATED IN THE TEXT OF THIS REPORT. THESE DATA HAVE BEEN REVIEWED AND INTERPRETATIONS MADE IN THE TEXT OF THIS REPORT. HOWEVER, FLUCTUATIONS IN THE LEVEL OF THE GROUNDWATER MAY OCCUR DUE TO VARIATIONS IN RAINFALL, TEMPERATURE AND OTHER FACTORS.
3. 2016 WAS THE LAST COMPREHENSIVE YEAR THAT SITE WIDE MONITORING WELLS WAS AVAILABLE.

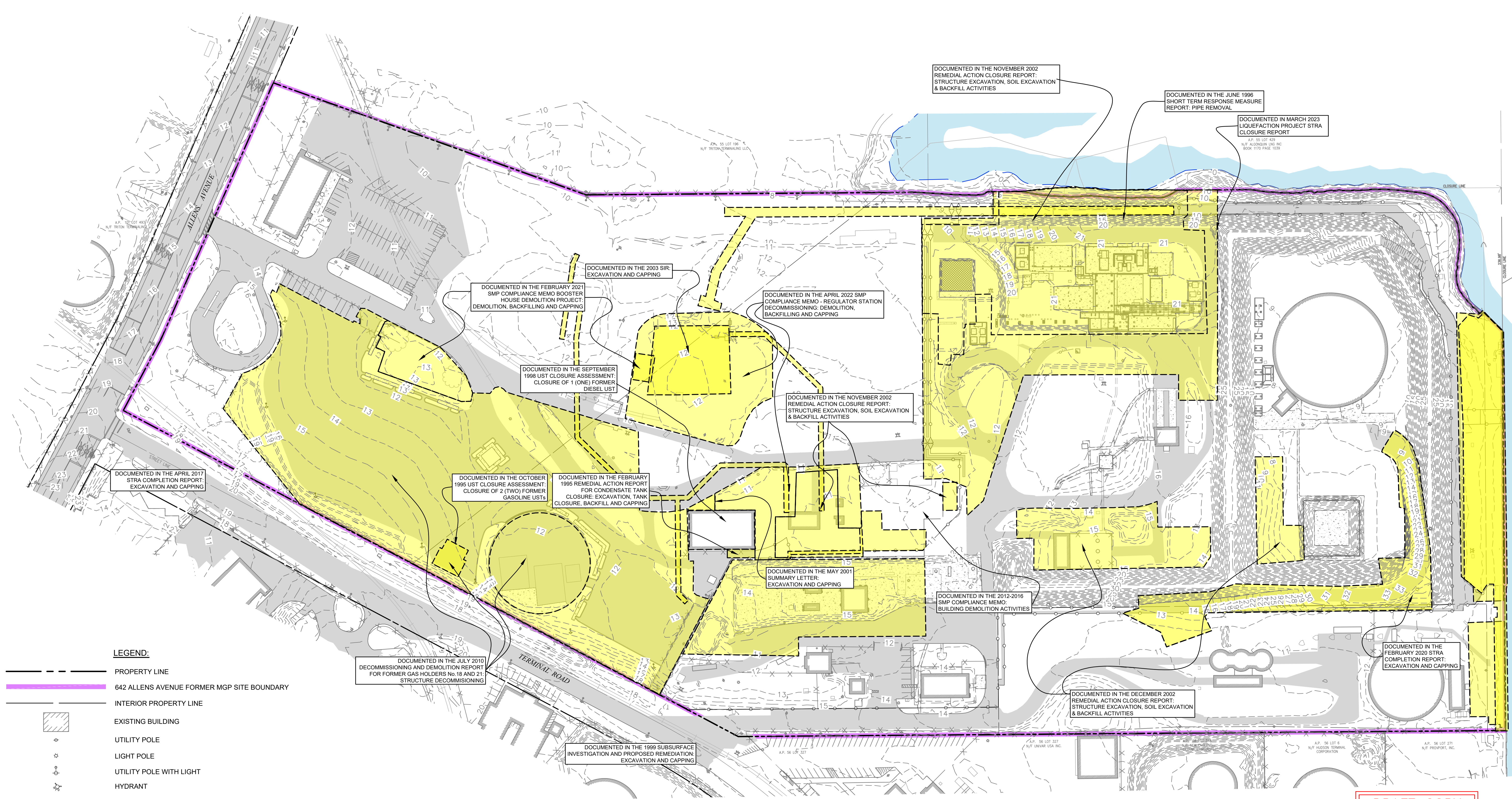
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| | | | |
|---|---|--|---|
| <p>SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND</p> | | | |
| <p>SHALLOW GROUNDWATER CONTOURS (MAY 2016)</p> | | | |
| <p>PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p> | | <p>PREPARED FOR: Rhode Island Energy L.P.</p> | |
| <p>PROJ MGR: SH DESIGNED BY: SH DATE: DECEMBER 2023</p> | <p>REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO.: 33554.01</p> | <p>CHECKED BY: JJC SCALE: AS NOTED REVISION NO.: 0</p> | <p>FIGURE 6B SHEET NO. 9 OF 12</p> |

2023 - GZA GeoEnvironmental, Inc. - GZA-VA-ENV-33554-01-SUBFIGURES-CAD-DWG-33554-01-COMPLETED REMEDIAL ACTIONS.DWG 10 DECEMBER 1, 2023 10:49 AM USA THERIAULT



LEGEND:

- PROPERTY LINE
- 642 ALLENS AVENUE FORMER MGP SITE BOUNDARY
- INTERIOR PROPERTY LINE
- EXISTING BUILDING
- UTILITY POLE
- LIGHT POLE
- UTILITY POLE WITH LIGHT
- HYDRANT
- STEEL POST
- EDGE OF WATER
- FENCE
- LNG DOUBLE SECURITY FENCE
- RAILROAD TRACKS
- EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- EXISTING PAVEMENT
- EXISTING CONCRETE
- EXISTING RIP RAP
- REMEDIAL ACTIONS

DOCUMENTED IN THE JULY 2010 DECOMMISSIONING AND DEMOLITION REPORT FOR FORMER GAS HOLDERS No. 19 AND 21 STRUCTURE DECOMMISSIONING

DOCUMENTED IN THE OCTOBER 1995 UST CLOSURE ASSESSMENT: CLOSURE OF 2 (TWO) FORMER GASOLINE USTS

DOCUMENTED IN THE FEBRUARY 1996 REMEDIAL ACTION REPORT FOR CONDENSATE TANK CLOSURE: EXCAVATION, TANK CLOSURE, BACKFILL AND CAPPING

DOCUMENTED IN THE FEBRUARY 2021 SMP COMPLIANCE MEMO BOOSTER HOUSE DEMOLITION PROJECT: DEMOLITION, BACKFILLING AND CAPPING

DOCUMENTED IN THE SEPTEMBER 1998 UST CLOSURE ASSESSMENT: CLOSURE OF 1 (ONE) FORMER DIESEL UST

DOCUMENTED IN THE 2003 SIR: EXCAVATION AND CAPPING

DOCUMENTED IN THE APRIL 2022 SMP COMPLIANCE MEMO - REGULATOR STATION DECOMMISSIONING: DEMOLITION, BACKFILLING AND CAPPING

DOCUMENTED IN THE NOVEMBER 2002 REMEDIAL ACTION CLOSURE REPORT: STRUCTURE EXCAVATION, SOIL EXCAVATION & BACKFILL ACTIVITIES

DOCUMENTED IN THE MAY 2001 SUMMARY LETTER: EXCAVATION AND CAPPING

DOCUMENTED IN THE 2012-2016 SMP COMPLIANCE MEMO: BUILDING DEMOLITION ACTIVITIES

DOCUMENTED IN THE DECEMBER 2002 REMEDIAL ACTION CLOSURE REPORT: STRUCTURE EXCAVATION, SOIL EXCAVATION & BACKFILL ACTIVITIES

DOCUMENTED IN THE 1999 SUBSURFACE INVESTIGATION AND PROPOSED REMEDIATION: EXCAVATION AND CAPPING

DOCUMENTED IN THE NOVEMBER 2002 REMEDIAL ACTION CLOSURE REPORT: STRUCTURE EXCAVATION, SOIL EXCAVATION & BACKFILL ACTIVITIES

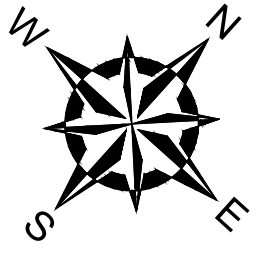
DOCUMENTED IN THE JUNE 1996 SHORT TERM RESPONSE MEASURE REPORT: PIPE REMOVAL

DOCUMENTED IN MARCH 2023 LIQUEFACTION PROJECT STRA CLOSURE REPORT

DOCUMENTED IN THE FEBRUARY 2020 STRA COMPLETION REPORT: EXCAVATION AND CAPPING

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

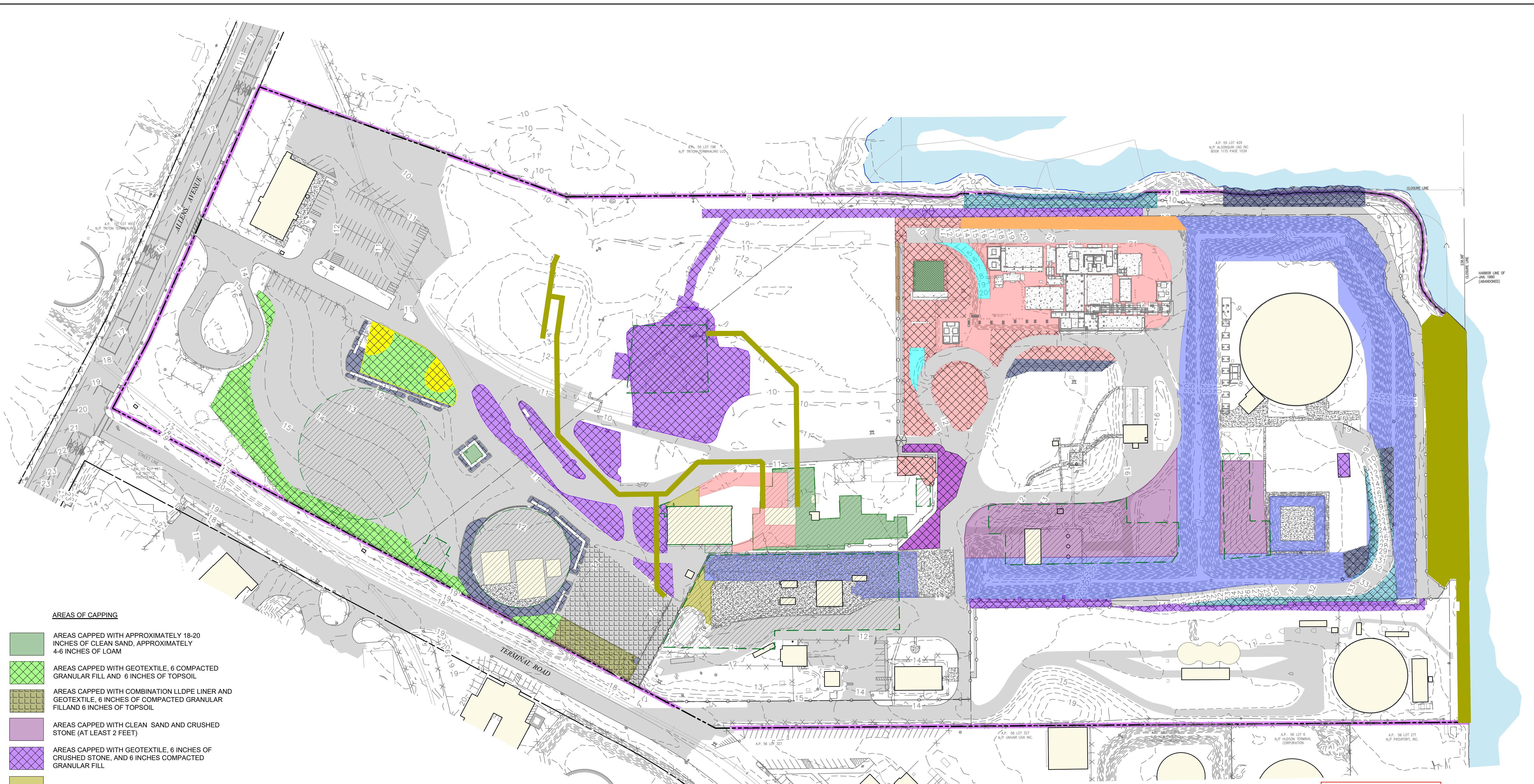
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| | | | |
|--|-----------------|--|--------------------|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | | | |
| COMPLETED REMEDIAL ACTIONS (1995-2022) | | | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | PREPARED FOR: Rhode Island Energy RIE.com | |
| PROJ MGR: SH | DESIGNED BY: SH | REVIEWED BY: MSK | CHECKED BY: JJC |
| DATE: DECEMBER 2023 | DRAWN BY: LDT | PROJECT NO.: 33554.01 | SCALE: AS NOTED |
| | | REVISION NO.: 0 | FIGURE 7 |
| | | | SHEET NO. 10 OF 12 |

2023 - GZA GeoEnvironmental, Inc. - GZA-VA-EPA-33554.01-SINFIGURES-CAD-DWG-33554.01 SITE INVESTIGATION REPORT - ADDENDUM 11 - 33554.01 - EXISTING ENGINEERED CONTROLS.DWG 11 DECEMBER 1, 2023 10:21 AM LISA THERIAULT



AREAS OF CAPPING

- AREAS CAPPED WITH APPROXIMATELY 18-20 INCHES OF CLEAN SAND, APPROXIMATELY 4-6 INCHES OF LOAM
- AREAS CAPPED WITH GEOTEXTILE, 6 COMPACTED GRANULAR FILL AND 6 INCHES OF TOPSOIL
- AREAS CAPPED WITH COMBINATION LLDPE LINER AND GEOTEXTILE, 6 INCHES OF COMPACTED GRANULAR FILL AND 6 INCHES OF TOPSOIL
- AREAS CAPPED WITH CLEAN SAND AND CRUSHED STONE (AT LEAST 2 FEET)
- AREAS CAPPED WITH GEOTEXTILE, 6 INCHES OF CRUSHED STONE, AND 6 INCHES COMPACTED GRANULAR FILL
- AREAS CAPPED WITH 2 FEET OF CLEAN FILL
- AREAS CAPPED WITH APPROXIMATELY 2 FEET OF STONE DUST
- AREAS CAPPED WITH GEOTEXTILE AND APPROXIMATELY 2 FEET OF RIP RAP
- AREAS CAPPED WITH GEOTEXTILE AND 12 INCHES OF RIP RAP
- AREAS CAPPED WITH COMBINATION LLDPE LINER AND GEOTEXTILE, 8 INCHES OF PROCESSED GRAVEL AND 4 INCHES OF PAVEMENT
- AREAS CAPPED WITH GEOTEXTILE AND 6-12 INCHES OF SHREDDED BARK MULCH
- AREAS CAPPED WITH 12" COMPACTED AGGREGATE BASE AND A MINIMUM OF 8 INCHES SOIL SUBGRADE
- AREAS CAPPED WITH GEOTEXTILE AND 4-6 INCHES OF CRUSHED STONE AND 6-8 INCHES PROCESSED GRAVEL
- AREAS CAPPED WITH 6 INCHES CRUSHED STONE AND 18 INCHES PROCESSED GRAVEL

AREAS EQUIVALENT TO AN ENGINEERED CAP

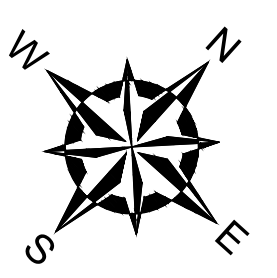
- BUILDING/STRUCTURE
- PAVED AREAS
- CONTAINMENT DIKE (CLEAN SOIL MATERIAL)
- CONCRETE

LEGEND:

- PROPERTY LINE
- 642 ALLENS AVENUE FORMER MGP SITE BOUNDARY
- INTERIOR PROPERTY LINE
- UTILITY POLE
- LIGHT POLE
- UTILITY POLE WITH LIGHT
- HYDRANT
- STEEL POST
- EDGE OF WATER
- FENCE
- LNG DOUBLE SECURITY FENCE
- RAILROAD TRACKS
- EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

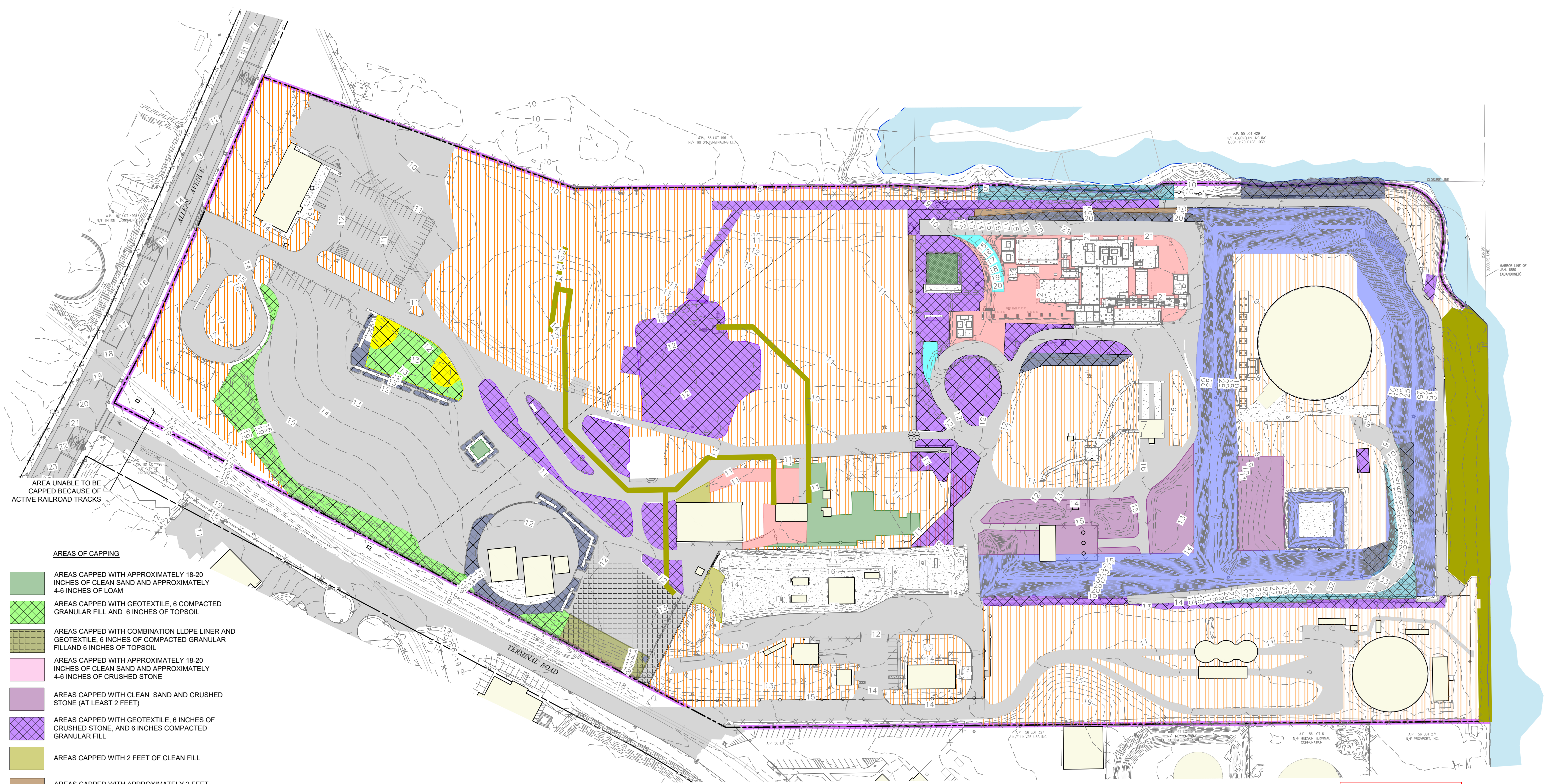
**DRAFT COPY
ISSUED FOR REVIEW**



THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (NEC) OR THE NEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND NEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND NEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND NEC.

| | | | |
|--|-----------------|--|---------------------|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | | | |
| EXISTING ENGINEERED CONTROLS | | | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | PREPARED FOR: Rhode Island Energy RI Energy | |
| PROJ MGR: SH | DESIGNED BY: SH | REVIEWED BY: MSK | CHECKED BY: JJC |
| DATE: DECEMBER 2023 | DRAWN BY: LDT | PROJECT NO.: 33554.01 | SCALE: AS NOTED |
| | | | REVISION NO.: 0 |
| | | | FIGURE 8 |
| | | | SHEET NO. 11 OF 12 |

2023 - GZA GeoEnvironmental, Inc. - GZA-VA-ENV-33554.01-SITE INVESTIGATION REPORT - ADDENDUM 12-33554.01 - 08/27/2023 10:17 AM LSKA THERMALT



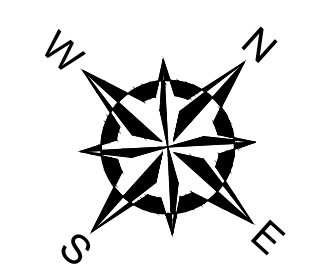
- AREAS OF CAPPING**
- AREAS CAPPED WITH APPROXIMATELY 18-20 INCHES OF CLEAN SAND AND APPROXIMATELY 4-6 INCHES OF LOAM
 - AREAS CAPPED WITH GEOTEXTILE, 6 COMPACTED GRANULAR FILL AND 6 INCHES OF TOPSOIL
 - AREAS CAPPED WITH COMBINATION LLDPE LINER AND GEOTEXTILE, 6 INCHES OF COMPACTED GRANULAR FILL AND 6 INCHES OF TOPSOIL
 - AREAS CAPPED WITH APPROXIMATELY 18-20 INCHES OF CLEAN SAND AND APPROXIMATELY 4-6 INCHES OF CRUSHED STONE
 - AREAS CAPPED WITH CLEAN SAND AND CRUSHED STONE (AT LEAST 2 FEET)
 - AREAS CAPPED WITH GEOTEXTILE, 6 INCHES OF CRUSHED STONE, AND 6 INCHES COMPACTED GRANULAR FILL
 - AREAS CAPPED WITH 2 FEET OF CLEAN FILL
 - AREAS CAPPED WITH APPROXIMATELY 2 FEET OF STONE DUST
 - AREAS CAPPED WITH GEOTEXTILE AND APPROXIMATELY 2 FEET OF RIP RAP
 - AREAS CAPPED WITH GEOTEXTILE AND 12 INCHES OF RIP RAP
 - AREAS CAPPED WITH COMBINATION LLDPE LINER AND GEOTEXTILE, 8 INCHES OF PROCESSED GRAVEL AND 4 INCHES OF PAVEMENT
 - AREAS CAPPED WITH GEOTEXTILE AND 6-12 INCHES OF SHREDDED BARK MULCH
 - AREAS CAPPED WITH 12" COMPACTED AGGREGATE BASE AND A MINIMUM OF 8 INCHES SOIL SUBGRADE
 - AREAS CAPPED WITH GEOTEXTILE AND 4-6 INCHES OF CRUSHED STONE AND 6-8 INCHES PROCESSED GRAVEL
 - AREAS CAPPED WITH 6 INCHES CRUSHED STONE AND 18 INCHES PROCESSED GRAVEL
 - AREAS OF PROPOSED PROGRESSIVE CAPPING

- AREAS EQUIVALENT TO AN ENGINEERED CAP**
- BUILDING/STRUCTURE
 - PAVED AREAS
 - CONTAINMENT DIKE (CLEAN SOIL MATERIAL)
 - CONCRETE

- LEGEND:**
- PROPERTY LINE
 - 642 ALLENS AVENUE FORMER MGP SITE BOUNDARY
 - INTERIOR PROPERTY LINE
 - UTILITY POLE
 - LIGHT POLE
 - UTILITY POLE WITH LIGHT
 - HYDRANT
 - STEEL POST
 - EDGE OF WATER
 - FENCE
 - LNG DOUBLE SECURITY FENCE
 - RAILROAD TRACKS
 - EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
 - EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

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THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

| | | | |
|--|--|---|---|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | | | |
| RECOMMENDED REMEDIAL ALTERNATIVE (RAA#2) | | | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | PREPARED FOR: Rhode Island Energy an eversource company | | |
| PROJ MGR: SH DESIGNED BY: SH DATE: DECEMBER 2023 | REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO.: 33554.01 | CHECKED BY: JJC SCALE: AS NOTED REVISION NO.: 0 | FIGURE 9 SHEET NO. 12 OF 12 |



APPENDIX A

LIMITATIONS

GEOHYDROLOGICAL LIMITATIONS

1. This *Site Investigation Report (SIR) Addendum* has been prepared on behalf of and for the exclusive use of The Narragansett Electric Company (TNEC), solely for use in documenting the conditions observed at the property located at 642 Allens Avenue in Providence, Rhode Island ("Site"). This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, nor used by any other party in whole or in part, without the prior written consent of GZA or TNEC.
2. GZA's work was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area, and GZA observed that degree of care and skill generally exercised by other consultants under similar circumstances and conditions. GZA's findings and conclusions must be considered not as scientific certainties, but rather as our professional opinion concerning the significance of the limited data gathered during the course of the study. No other warranty, express or implied is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during the performance of our Site investigations.
3. The observations described in this report were made under the conditions stated therein. The conclusions presented in the report were based upon services performed and observations made by GZA.
4. In the event that National Grid or others authorized to use this report obtain information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.
5. The conclusions and recommendations contained in this report are based in part upon the data obtained from environmental samples obtained from relatively widely spread subsurface explorations. The nature and extent of variations between these explorations may not become evident until further exploration. If variations or other latent conditions then appear evident, it will be necessary to reevaluate the conclusions and recommendations of this report.
6. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the boring logs.

7. In the event this work included the collection of water level data, these readings have been made in the test pits, borings and/or observation wells at times and under conditions stated on the exploration logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall and other factors different from those prevailing at the time measurements were made.

8. The conclusions contained in this report are based in part upon various types of chemical data and are contingent upon their validity. These data have been reviewed and interpretations made in the report. Moreover, it should be noted that variations in the types and concentrations of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past disposal practices, the passage of time, and other factors. Should additional chemical data become available in the future, these data should be reviewed by GZA and the conclusions and recommendations presented herein modified accordingly.



APPENDIX B

SIR CHECKLIST

Section 1.20 of the "Remediation Regulations"

Site Investigation Report (SIR) Checklist

(The following information shall be completed and submitted with the SIR)

Contact Name:
Contact Address:
Contact Telephone:

Site Name:
Site Address:

OFFICE USE ONLY

SITE INVESTIGATION REPORT (SIR) SITE:
PROJECT CODE:
SIR SUBMITTAL DATE:
CHECKLIST SUBMITTAL DATE:

DIRECTIONS: *The box to the left of each item listed below is for the administrative review of the SIR submission and is for **RIDEM USE ONLY**. Under each item listed below, cross-reference the specific sections and pages in the SIR that provide detailed information that addresses each stated requirement. Failure to include cross-references may delay review and approval. If an item is not applicable, simply state that it is not applicable and provide an explanation in the SIR.*

- 1.8.3(A)(1) List specific objectives of the SIR related to characterization of the Release, impacts of the Release and remedy.
- 1.8.3(A)(2) Include information reported in the Notification of Release. A copy of the Release notification form should be included in the SIR. Include information relating to short-term response, if applicable.
- 1.8.3(A)(3) Include documentation of any past incidents or Releases.
- 1.8.3(A)(4) Include list of prior property Owners and Operators, as well as sequencing of property transfers and time periods of occupancy.
- 1.8.3(A)(5) Include previously existing environmental information which characterizes the Contaminated-Site and all information that led to the discovery of the Contaminated-Site.
- 1.8.3(A)(6) Include current uses and zoning of the Contaminated-Site, including brief statements of operations, processes employed, waste generated, Hazardous Materials handled, and any residential activities on the site, if applicable. (This section should be linked to the specific objectives section demonstrating how the compounds of concern in the investigation are

those that are used or may have been used on the site or are those that may have impacted the site from an off-site source.)

1.8.3(A)(7) Include a locus map showing the location of the site using US Geological Survey 7.5-min quadrangle map or a copy of a section of that USGS map.

1.8.3(A)(8) Include a site plan, to scale, showing:

Buildings

Activities

Structures

North Arrow

Wells

UIC Systems, septic tanks, UST, piping and other underground structures

Outdoor Hazardous Materials storage and handling areas

Extent of paved areas

Location of environmental samples previously taken with analytical results

Waste management and disposal areas

Property Lines

1.8.3(A)(9) Include a general characterization of the property surrounding the area including, but not limited to:

Location and distance to any surface water bodies within 500 ft of the site.

Location and distance to any Environmentally Sensitive Areas within 500 ft of the site.

Actual sources of potable water for all properties immediately abutting the site.

Location and distance to all public water supplies, which have been active within the previous 2 years and within one mile of the site.

Determination as to whether the Release impacts any off-site area utilized for residential or industrial/commercial property or both.

Determination of the underlying groundwater classification and if the classification is GB, the distance to the nearest GA area.

1.8.3(A)(10) Include classifications of surface and ground water at and surrounding the site that could be impacted by a Release.

1.8.3(A)(11) Include a description of the contamination from the Release, including:

Free liquids on the surface

LNAPL and DNAPL

Concentrations of Hazardous Substances which can be shown to present an actual or potential threat to human health and any concentrations in excess of any of the remedial objectives (reference Section 1.13)

Impact to Environmentally Sensitive Areas

Contamination of man-made structures

Odors or stained soil

Stressed vegetation

Presence of excavated or stockpiled material and an estimate of its total volume

Environmental sampling locations, procedures and copies of the results of any analytical testing at the site

List of Hazardous Substances at the site

Discuss if the contamination falls outside of the jurisdiction of the Remediation Regulations, including but not limited to USTs, UICs, and wetlands.

1.8.3(A)(12) Include the concentration gradients of Hazardous Substances throughout the site for each media impacted by the Release.

- 1.8.3(A)(13) Include the methodology and results of any investigation conducted to determine background concentrations of Hazardous Substances identified at the Contaminated-Site (see Section 1.13).
- 1.8.3(A)(14) Include a listing and evaluation of the site specific hydrogeological properties which could influence the migration of Hazardous Substances throughout and away from the site, including but not limited to, where appropriate:
- Depth to GW
 - Presence and effects of both the natural and man-made barriers to and conduits for contaminant migration
 - Characterization of bedrock
 - Groundwater contours, flow rates and gradients throughout the site
- 1.8.3(A)(15) Include a characterization of the topography, surface water and run-off flow patterns, including the flooding potential, of the site.
- 1.8.3(A)(16) Include the potential for Hazardous Substances from the site to volatilize and any and all potential impacts of the volatilization to structures within the site.
- 1.8.3(A)(17) Include the potential for entrainment of Hazardous Substances from the site by wind or erosion actions.
- 1.8.3(A)(18) Include detailed protocols for all fate and transport models used in the Site Investigation.
- 1.8.3(A)(19) Include a complete list of all samples taken, the location of all samples, parameters tested for and analytical methods used during the Site Investigation. (Be sure to include the samples locations and analytical results on a site figure).
- 1.8.3(A)(20) Include construction plans and development procedures for all monitoring wells. Well construction shall be consistent with the requirements of the Groundwater Quality Rules.
- 1.8.3(A)(21) Include procedures for the handling, storage and disposal of wastes derived from and during the investigation.

1.8.3(A)(22) Include a quality assurance and quality control evaluation summary report for sample handling and analytical procedures, including, but not limited to, chain-of-custody procedures and sample preservation techniques.

1.8.3(A)(23) Include any other site-specific factor, that the Director believes, is necessary to make an accurate decision as to the appropriate Remedial Action to be taken at the site.

1.8.4 Include Remedial Alternatives. The Site Investigation Report shall contain a minimum of **TWO (2)** remedial alternatives other than no action/natural attenuation alternative, unless this requirement is waived by the Department. It should be clear which of these alternatives is most preferable. All alternatives shall be supported by relevant data contained in the Site Investigation Report and consistent with the current and reasonably foreseeable land usage, and documentation of the following:

- Compliance with Section 1.9 (RISK MANGEMENT);
- Technical feasibility of the preferred remedial alternative;
- Compliance with federal, state and local laws or other public concerns; and
- The ability of the Performing Party to perform the preferred remedial alternative.

1.8.5 **Certification Requirements:** The Site Investigation Report and all associated progress reports shall include the following statements signed by an authorized representative of the party specified:

A statement signed by an authorized representative of the Person who prepared the Site Investigation Report certifying the completeness and accuracy of the information contained in that report to the best of their knowledge; and

A statement signed by the Performing Party responsible for the submittal of the Site Investigation Report certifying that the report is a complete and accurate representation of the site and the Release and contains all known facts surrounding the Release to the best of their knowledge.

1.8.6 **Progress Reports:** If the Site Investigation is not complete, include a schedule for the submission of periodic progress reports on the status of the investigation and interim reports on any milestones achieved in the project.

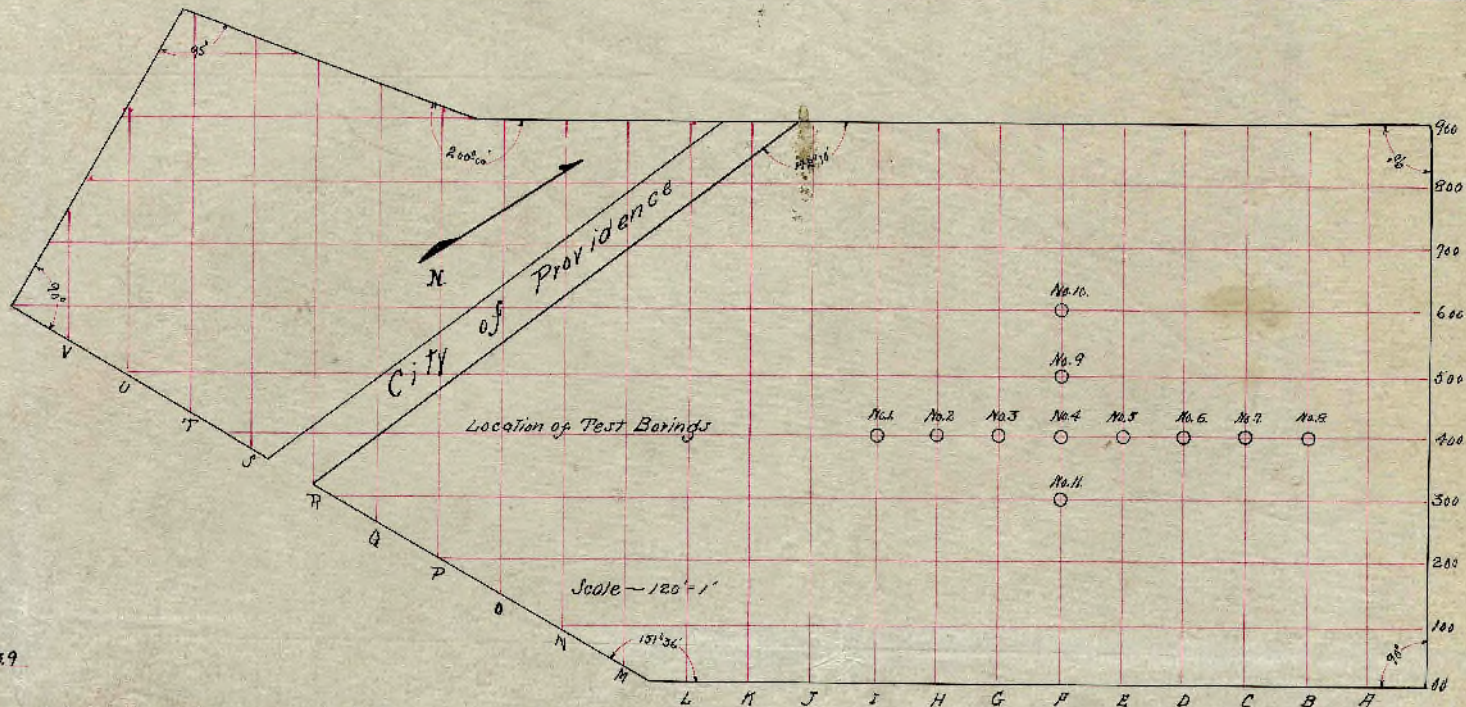
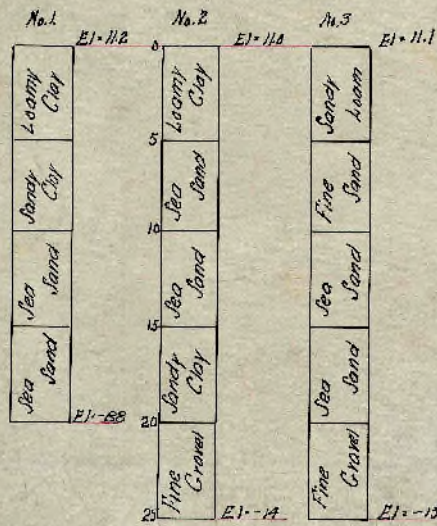
Public Involvement and Notice: Be prepared to implement public notice requirements per Sections 1.8.7 and 1.8.9 of the Remediation Regulations when the Department deems the Site Investigation Report to be complete.

Indicate if the site falls within an Environmental Justice (EJ) area and, if applicable, include all EJ public notice documentation issued, and the list of recipients.



APPENDIX C

HISTORICAL GEOTECHNICAL BORING LOGS



Borings ~ 8" diameter

Scale - 40' = 1"

Providence Gas Company
Sassafras Point
Test Borings under Sassafras Point Plat
Scale - 40' = 1" June 5, 1912.

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

SHEET 1 OF 3
 DATE _____
 HOLE NO. 1
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| GROUND WATER OBSERVATIONS | | Rods - "AW" Type | CASING | SAMPLER | CORE BAR. | Date | | Time | |
|---------------------------|------------------------|------------------------|-------------|---------------|-----------|--------------------------------|----------|------|--|
| At | after | | | | | START | COMPLETE | | |
| At <u>9.0'</u> | after <u>16</u> Hours | | | <u>S/S</u> | | START <u>3/5/71</u> | | | |
| <u>8.5'</u> | after <u>1/2</u> Hours | Size I.D. <u>NX</u> | <u>300#</u> | <u>1 3/8"</u> | | COMPLETE <u>3/5/71</u> | | | |
| | | Hammer Wt. <u>24"</u> | <u>300#</u> | <u>140#</u> | BIT | TOTAL HRS. _____ | | | |
| | | Hammer Fall <u>24"</u> | <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>Peterson</u> | | | |
| | | | | | | INSPECTOR <u>Debbie Huff</u> | | | |
| | | | | | | SOILS ENGR. _____ | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 7 | | 0'-1'6" | D | 3 | 2 | 3 | Dry loose | 1.0' | Br. F-M SAND, bricks, cinders | 1 | 18" | 18" |
| 6 | | | | | | | | | Layer of fine SAND (FILL) | | | |
| 19 | | | | | | | | 4.0' | | | | |
| 20 | | | | | | | | | | | | |
| 25 | | | | | | | Wet loose | | | | | |
| 25 | 5'-6' | | D | 3 | 4 | | V. dense | | layer of black CINDERS | 2 | 12" | 12" |
| 23 | 6'-6'2" | | D** | 60 | | | | 7'6" | 6'-6'2" CONCRETE | 2A | 2" | 2" |
| 13 | 6'6"-9'6" | | D | 3 | 3 | 8 | Wet M. dense | | Gray green fine to medium SAND, lit. silt & F-M gravel | 3 | 36" | 18" |
| 17 | | | | 8 | 8 | 5 | | 9'6" | | | | |
| 9 | | | | | | | | | | | | |
| 5 | 10'-11'6" | | D | 2 | 1 | 1 | Wet soft | | Gray ORGANIC SILT, some peat trace wood | 4 | 18" | 18" |
| 8 | | | | | | | | 13' | | | | |
| 10 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 28 | | | | | | | Wet medium dense | | Gray fine to coarse SAND, some fine to coarse gravel trace silt | 5 | 18" | 12" |
| 10 | 15'-16'6" | | D | 13 | 13 | 9 | | | | | | |
| 20 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 24 | 20'-21'6" | | D | 17 | 11 | 14 | " | | | 6 | 18" | 12" |
| 32 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 23 | 25'-26'6" | | D | 24 | 14 | 5 | " | 25' | Yellow brown fine to coarse SAND, some silt, trace cobbles | 7 | 18" | 12" |
| 23 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 36 | | | | | | | Wet very dense | | at 30' some fine to coarse gravel | 8 | 18" | 12" |
| 31 | 30'-31'6" | | D | 15 | 23 | 36 | | 34' | | | | |
| 72 | | | | | | | | | | | | |
| 98 | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 31 | 35'-36'6" | | D | 32 | 32 | 32 | Wet very stiff | | Pushing COBBLE | - | 18" | 0" |
| 38 | | | | | | | | | | | | |
| 75 | 36'6"-38' | | D | 25 | 13 | 17 | | | Light gray brown SILT | 9 | 18" | 12" |
| 77 | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | |

GROUND SURFACE TO 95' USED NX CASING: THEN S/S to 97'

| | | | | |
|--|---|--|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V. Stiff 30+ Hard | SUMMARY: Earth Boring <u>97'</u> Rock Coring Samples <u>22</u> HOLE NO <u>1</u> |
|--|---|--|---|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3
 DATE _____
 HOLE NO. 1
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | | | | |
|--|-------------|-------------------|---------|-----------|-------------------------|------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
| At <u>Same as #1</u> after _____ Hours | Type | <u>Same as #1</u> | _____ | _____ | START <u>Same as #1</u> | _____ a.m. |
| _____ after _____ Hours | Size I.D. | _____ | _____ | _____ | COMPLETE _____ | _____ a.m. |
| | Hammer Wt. | _____ | _____ | BIT | TOTAL HRS. _____ | |
| | Hammer Fall | _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 55 | | 40'-41'6" | D | 12 | 9 | 10 | Wet very stiff | 44' | Light gray brown SILT | 10 | 18" | 12" |
| 60 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 77 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 28 | | 45'-47' | D | 7 | 8 | 8 | Wet medium dense | 50' | Brown fine to coarse SAND, trace silt & fine to medium gravel (running sand) | 11 | 24" | 12" |
| 37 | | | | 9 | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | |
| 52 | | 50'-52' | D | 60 | 40 | 38 | Wet very dense | 53' | Brown fine to coarse SAND and gravel, trace silt (cobbles) | 12 | 24" | 6" |
| 90 | | | | 52 | | | | | | | | |
| 76 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | |
| 72 | | 55'-56'6" | D | 20 | 22 | 23 | Wet dense | | Gray fine to coarse SAND, some silt & fine to coarse gravel (cobbles) | 13 | 18" | 18" |
| 100 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 120 | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | |
| 89 | | 60'-62' | D | 32 | 23 | 28 | Wet very dense | 62' | | 14 | 24" | 12" |
| 109 | | | | 23 | | | | | | | | |
| 74 | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | |
| 73 | | 65'-67' | D | 21 | 16 | 15 | Wet dense | | Blue gray fine to medium SAND, little silt, trace fine to coarse gravel (cobbles) | 15 | 24" | 6" |
| 73 | | | | 19 | | | | | | | | |
| 86 | | | | | | | | | | | | |
| 130 | | | | | | | | | | | | |
| 115 | | | | | | | | | | | | |
| 60 | | 70'-72' | D | 15 | 20 | 28 | Wet very dense | | | 16 | 24" | 6" |
| 105 | | | | 36 | | | | | | | | |
| 130 | | | | | | | | | | | | |
| 102 | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | |
| 60 | | 75'-76'6" | D | 30 | 22 | 23 | " | 76'6" | | - | 18" | 0" |
| 110 | | 76'6"-77'6" | D | 27 | 49 | | " | | Gray fine to coarse SAND, some fine to coarse gravel & silt (cobbles) | 17 | 12" | 6" |
| 172 | | | | | | | | | | | | |
| 233 | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | |
| 125 | | | | | | | | | | | | |

| | | | |
|---------------------------------|------------------|---|----------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Earth Boring _____ |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Cohesive Consistency |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | 0-4 Soft 30 + Hard |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | 4-8 M/Stiff |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | 8-15 Stiff |
| | | 50+ Very Dense | 15-30 V. Stiff |
| | | | HOLE NO <u>1</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 1

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

GROUND WATER OBSERVATIONS
 At Same as #1 after _____ Hours
 _____ after _____ Hours
 Type _____
 Size I.D. _____
 Hammer Wt. _____
 Hammer Fall _____

CASING SAMPLER CORE BAR.
Same as #1 _____

 _____ BIT

Date _____ Time _____
 START Same as #1 _____ a.m.
 COMPLETE _____ p.m.
 TOTAL HRS. _____
 BORING FOREMAN _____
 INSPECTOR _____
 SOILS ENGR. _____

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc. | SAMPLE | | |
|--|-------------------------------|----------------------|----------------------------|------|-------|---------------------------------------|---------------------------|---|--------|---------|----------|
| | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 73 | 80'-82'6" | D* | 73 | 47 | 48 | Wet | 95' | Blue gray TILL - fine to crs. SAND, some silt & fine to coarse gravel, trace cobbles layers of sand | 18 | 30 | 12" |
| 103 | | | 44 | 30 | | V.dense | | | | | |
| 153 | | | | | | | | | | | |
| 185 | 82'6"-84' | D | 33 | 27 | 13 | Wet | | | | | - 18" 0" |
| 160 | | | | | | dense | | | | | |
| 105 | 85'-87' | D | 70 | 48 | 17 | " | | | | 19 | 24" 12" |
| 154 | | | 21 | | | | | | | | |
| 148 | | | | | | | | | | | |
| 113 | | | | | | | | | | | |
| 185 | | | | | | Wet | | | | | |
| 112 | 90'-92' | D | 29 | 26 | 26 | very | | | | 20 | 24" 12" |
| 190 | | | 35 | | | dense | | | | | |
| 270 | 92'-95' | D** | 17 | | | | | | | 21 | 36" - |
| 225 | | | 17 | | | | | | | | |
| 290 | | | 17 | | | | | | | | |
| | 95'-97' | D | 20 | 21 | 23 | Wet | 97' | Gray fine to coarse SAND, trace silt & F-C gravel | 22 | 18" 12" | |
| | | | 29 | | | V.dense | | Bottom of boring 97' | | | |
| <p>D* denotes used 140# wt on open end A rod sampler</p> <p>D** denotes used 300# wt on open end A rod sampler</p> | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

| | | | |
|---------------------------------|------------------|---|--------------------|
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Earth Boring _____ |
| JP=Undisturbed Piston | little 10 to 20% | Cohesive Consistency | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 0-10 Loose | Samples _____ |
| UT=Undisturbed Thinwall | and 35 to 50% | 10-30 Med. Dense | |
| | | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft 30 + Hard | HOLE NO. <u>1</u> |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 2
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 PORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | Rods-"AW" Type | CASING Size I.D. | SAMPLER HW | CORE BAR. S/S | Date | Time |
|---------------------------|----------------------|------------------------|------------------------|---------------|------------------|--------------------------------|--|
| At <u>8'7"</u> | after <u>3</u> Hours | | | | | | |
| <u>45' casing</u> | after _____ Hours | Hammer Wt. <u>300#</u> | Hammer Fall <u>24"</u> | <u>1 3/8"</u> | <u>140#</u> | START <u>3/16/71</u> | <u>_____</u> o.m. <u>_____</u> p.m. |
| | | | | | BIT | COMPLETE <u>3/16/71</u> | <u>_____</u> o.m. <u>_____</u> p.m. |
| | | | | | | TOTAL HRS. _____ | |
| | | | | | | BORING FOREMAN <u>Peterson</u> | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From- To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 80 | | 0'-1'6" | D | 35 | 20 | 18 | Dry dense | 2' | FILL - ASPHALT, concrete, bricks, sand & gravel | 1 | 18" | 12" |
| 55 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 8 | | 5'-6'6" | D | 8 | 9 | 8 | Dry medium dense | | Yellow brown fine to medium SAND, some fine to medium gravel, trace silt FILL | 2 | 18" | 16" |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 4 | | 10'-11'6" | D | 7 | 5 | 4 | Wet loose | | | 3 | 18" | 12" |
| 8 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | 15'-15'6" | D | 7 | | | " | 15' | gray fine to coarse SAND | 4 | 6" | 6" |
| 7 | | 15'6"-16'6" | D | | 4 | 4 | Wet Stiff | 17'0" | Gray ORGANIC SILT & fine to medium sand | 4A | 12" | 12" |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | 20'-21'6" | D | 2 | 1 | 1 | Wet soft | | Gray ORGANIC SILT, trace sea shells & peat | 5 | 18" | 18" |
| 9 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 15 | | 25'-26'6" | D | 1 | - | 1 | " | | | 6 | 18" | 18" |
| 15 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 15 | | 30'-31.5' | D | 1 | - | 1 | " | | | 7 | 18" | 18" |
| 15 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 30 | | 35'-36' | D | 5 | 8 | | W-Stiff | 35' | Gray ORG. SILT & F-M sand | 8 | 12" | 12" |
| 50 | | 36'-37' | D | 17 | 21 | | Wet dense | 36' | Gray fine to medium SAND, trace fine to coarse gravel & silt | 8A | 12" | 12" |
| 50 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |

GROUND SURFACE TO 45' USED HW "CASING: THEN S/S to 47'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-20 Very Stiff

SUMMARY:
 Earth Boring 47'
 Rock Coring _____
 Samples 12
 HOLE NO. 2

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____
 HOLE NO. 2
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | | | |
|---|-------------------|-------------------|-----------|-------------------------|------------|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours | CASING | SAMPLER | CORE BAR. | Date | Time |
| | Type _____ | <u>Same as #1</u> | _____ | START <u>Same as #1</u> | o.m. _____ |
| _____ after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. _____ |
| | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | INSPECTOR _____ | |
| | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc. | SAMPLE | | |
|--------------------------------|-------------------------------|----------------------|-------------------------|-------|--------------|---------------------------------------|---------------------------|---|--------|-----|------|
| | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen | Rec. |
| 24 | 40'-41'6" | D | 15 | 14 | 30 | Wet dense | 43' | Blue-gray fine to medium SAND & gravel, trace silt (cobbles) | 9 | 18" | 16" |
| 34 | | | | | | | | | | | |
| 110 | | | | | | | | | | | |
| 65 | | | | | | | | | | | |
| 55 | 45'-47' | D | 38 | 33 | 36 | Wet very dense | 47' | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt, Cobbles Bottom of boring 47' | 10 | 24" | 12" |
| | | | | | | | | | | | |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| Sample Type D=Dry C=Cored W=Washed JP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff | |

HOLE NO 2

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE _____

HOLE NO. 3

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Gas Tank Installation

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. 71-130

GROUND WATER OBSERVATIONS

Rods - "AW"
 Type _____
 Size I.D. HW 1 3/8"
 Hammer Wt. 300# 140# BIT
 Hammer Fall 24" 30"

Date _____ Time _____
 START 3/13/71 _____ a.m.
 COMPLETE 3/15/71 _____ p.m.
 TOTAL HRS. _____
 BORING FOREMAN Peterson
 INSPECTOR _____
 SOILS ENGR. _____

At 9' after 1/2 Hours
15' Casing
 after _____ Hours

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 6 | 0'-1'6" | D | 2 | 3 | 3 | Dry loose | 2' | Brown fine SAND (FILL) | 1 | 18" | 12" |
| 10 | | | | | | Dry | | | | | |
| 65 | | | | | | very dense | | Black COAL, fine sand some silt | 2 | 18" | 12" |
| 85 | 3'-4'6" | D | 35 | 40 | 15 | loose | 6' | | 3 | 12" | 6" |
| 30 | | | | | | V. dense | 6' | CONCRETE | 3A | 6" | 6" |
| 8 | 5'-6' | D | 5 | 5 | | | | | | | |
| 120 | 6'-6'6" | D | | | 100 | | | | | | |
| 40 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |
| 3 | 10'-11'6" | D | 6 | 5 | 3 | Wet loose | 12' | Black fine to medium SAND trace coal FILL | 4 | 18" | 12" |
| 3 | | | | | | | | | | | |
| 6 | 12'-15' | D | 1 | per ft | | Wet soft | | Gray ORGANIC SILT, trace peat | 5 | 36" | 24" |
| 6 | | | 2 | | | | | | | | |
| 10 | | | 3 | | | | | | | | |
| 7 | 15'-16'6" | D | 3 | 5 | 7 | Wet medium dense | | Gray fine to coarse SAND & organic silt | 6 | 18" | 12" |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 16 | 20'-21'6" | D | 3 | 6 | 10 | " | | Gray brown fine to coarse SAND, little fine to coarse gravel, trace silt | 7 | 18" | 12" |
| 21 | | | | | | | | | | | |
| 31 | | | | | | | | | | | |
| 41 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
| 30 | 25'-26'6" | D | 29 | 21 | 31 | Wet very dense | | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt | 8 | 18" | 12" |
| 41 | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
| 65 | | | | | | | | | | | |
| 25 | 30'-32' | D | 20 | 13 | 12 | Wet medium dense | | | 9 | 24" | 18" |
| 32 | | | 12 | | | | | | | | |
| 45 | | | | | | | | | | | |
| 60 | | | | | | | | | | | |
| 45 | | | | | | | | | | | |
| 22 | 35'-37' | D | 8 | 10 | 16 | Wet dense | | | 10 | 24" | 18" |
| 30 | | | 17 | | | | | | | | |
| 40 | | | | | | | | | | | |
| 60 | | | | | | | | | | | |
| 56 | | | | | | | | | | | |

GROUND SURFACE TO 55' USED HW "CASING: THEN o.e. rod to 56'6"

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 56'6"
 Rock Coring _____
 Samples 15
 HOLE NO. 3

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 3

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

GROUND WATER OBSERVATIONS
 At Same as #1 after _____ Hours
 _____ after _____ Hours

CASING SAMPLER CORE BAR.
 Type Same as #1 _____
 Size I.D. _____
 Hammer Wt. _____ BIT _____
 Hammer Fall _____

Date Same as #1 Time _____
 START _____ a.m.
 COMPLETE _____ p.m.
 TOTAL HRS. _____
 BORING FOREMAN _____
 INSPECTOR _____
 SOILS ENGR. _____

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|---|-------------------------|----------------|-------------------------|---------|----------|------------------------------|--|---|--------|-----|------|
| | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 35 | 40'-42' | D | 9 | 10 | 10 | Wet medium dense | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt | 11 | 24" | 18" | |
| 47 | | | 11 | | | | | | | | |
| 47 | | | | | | | | | | | |
| 52 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
| 25 | 45'-47' | D | 25 | 17 | 18 | " | 53' | 12 | 24" | 4" | |
| 55 | | | 17 | | | | | | | | |
| 46 | | | | | | | | | | | |
| 60 | | | | | | | | | | | |
| 65 | | | | | | | | | | | |
| 36 | 50'-51'6" | D | 10 | 19 | 18 | Wet dense | 56.5' | 13 | 18" | 12" | |
| 57 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
| 78 | | | | | | | | | | | |
| 90 | | | | | | | | | | | |
| | 55'-56'6" | D** | 21 | 27 | 20 | Dry very dense | Gray brown fine to coarse SAND, some fine to medium gravel & silt TILL | 14 | 18" | 12" | |
| Bottom of boring 56.5' | | | | | | | | | | | |
| D** denotes used 300# wt. on open end A rod sampler | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

| | | | |
|--|---|--|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
|--|---|--|--|

HOLE NO. 3

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 PORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

SHEET 1 OF 2
 DATE _____
 HOLE NO. 4
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| | | | | |
|--|--|--|---------------------------------|---|
| GROUND WATER OBSERVATIONS <u>9'</u> after <u>16</u> Hours <u>40'</u> casing after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>BX</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ _____ BIT | Date _____ Time _____ START <u>3/10/71</u> _____ a.m. COMPLETE <u>3/11/71</u> _____ a.m. TOTAL HRS. _____ BORING FOREMAN <u>Peterson</u> INSPECTOR <u>Debbie Huff</u> SOILS ENGR. _____ |
|--|--|--|---------------------------------|---|

LOCATION OF BORING:

| DEP. | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | 5 | 0'-2' | D | 3 | 5 | 5 | Dry medium dense | 3' | Gray brown fine to medium SAND, little silt & fine to medium gravel | 1 | 18" | 12" |
| | 5 | | | 5 | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | 2 | | | | | | Wet loose | 7' | Gray brown fine to coarse SAND, trace fine to medium gravel & silt | 2 | 24" | 6" |
| | 1 | 5'-7' | D | 1 | - | 1 | | | | | | |
| | 1 | 7'-8' | D | 7 | 35 | | Wet dense | 9' | Gray-blue fine to coarse SAND, some F-C gravel Lit. Silt | 3 | 12" | 12" |
| | 19 | | | | | | | 10' | Wood & concrete | 4 | 12" | - |
| | 300 | 9'-10' | D | | | | | | | | | |
| | 14 | 10'-12' | D | 13 | 9 | 7 | Wet medium dense | | Gray fine to coarse SAND, some fine to coarse gravel trace silt (oil odor noted) | 5 | 24" | 12" |
| | 23 | | | 9 | | | | | | | | |
| | 20 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |
| | 29 | | | | | | Wet dense | | layers of dense gravel & cobbles | 6 | 18" | 12" |
| | 15 | 15'-16'6" | D | 15 | 16 | 17 | | | | | | |
| | 30 | | | | | | | | | | | |
| | 34 | | | | | | | | | | | |
| | 24 | | | | | | | | | | | |
| | 27 | | | | | | Wet very dense | 24' | | | | |
| | 15 | 20'-21'6" | D | 19 | 20 | 34 | | | | 7 | 18" | 6" |
| | 30 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | |
| | 35 | | | | | | | | | | | |
| | 20 | | | | | | Wet very stiff | | Brown SILT (varved), little fine sand in layers | 8 | 24" | 18" |
| | 16 | 25'-26'6" | D | 13 | 10 | 12 | | | | | | |
| | 17 | | | 10 | | | | | | | | |
| | 25 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | |
| 30 | 60 | | | | | | | | | | | |
| | 5 | 30'-32' | D | 12 | 14 | 18 | " | | | 9 | 24" | - |
| | 6 | | | 10 | | | | | | | | |
| | 7 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 7 | 35'-36'6" | D | 6 | 12 | 14 | " | 37'6" | Blue gray SILT | 10 | 18" | 18" |
| | 8 | | | | | | | | | | | |
| | 17 | | | | | | Wet V.dense | 39'6' | Gray blue TILL - fine to coarse sand & silt | 11 | 18" | 4" |
| 40 | 32 | | | | | | | | See following page | | | |

GROUND SURFACE TO 50' USED BX "CASING: THEN S/S to 52'

| | | | |
|--|---|--|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
|--|---|--|---|

SUMMARY:
 Earth Boring 52'
 Rock Coring _____
 Samples 17
HOLE NO. 4

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 4

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR. | Date | Time |
|--|-------------------|-------------------|-----------|--------------------------------|------------|
| AP <u>Same as #1</u> after _____ Hours | Type _____ | <u>Same as #1</u> | _____ | START <u>3/10/71</u> | _____ o.m. |
| _____ after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE <u>3/11/71</u> | _____ o.m. |
| _____ after _____ Hours | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ |
| _____ after _____ Hours | Hammer Fall _____ | _____ | _____ | BORING FOREMAN <u>Peterson</u> | _____ |
| _____ after _____ Hours | _____ | _____ | _____ | INSPECTOR <u>Dabbie Huff</u> | _____ |
| _____ after _____ Hours | _____ | _____ | _____ | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-----------------------|-------------------------|----------------|-------------------------|--------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 33 | 40'-41' | D | 15 | 14 | | Wet V. stiff | 41' | Brown SILT & fine to coarse sand, some F-M gravel | 12 | 12" | 8" |
| 65 | 41'-41'6" | D | | | 30 | Wet dense | | Brown fine SAND, some silt | 12A | 6" | 4" |
| 67 | | | | | | | | | | | |
| 47 | | | | | | | | | | | |
| 46 | | | | | | | 45' | | | | |
| 20 | 45'-46'6" | D | 21 | 36 | 30 | Wet V. Dense | 47' | Brown F-C SAND, little F-M gravel & silt (running sand) | 13 | 18" | - |
| 30 | | | | | | " | | | | | |
| 60 | 47'-48'6" | D | 33 | 33 | 18 | " | | Dark brown fine to coarse SAND, some fine to coarse gravel, little silt | 14 | 18" | 18" |
| 145 | | | | | | " | | | | | |
| 85 | 48'6"-50' | D | 18 | 27 | 28 | " | | @ 48'6" becomes gray brown | 15 | 18" | 18" |
| | 50'-52' | D | 40 | 50/20* | | " | 52' | Bottom of boring 52' | 16 | 18" | 18" |
| | | | | 54 | 40 | | | | | | |
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* indicates used
 300# wt

GROUND SURFACE TO 50' USED BX "CASING: THEN S/S to 52'

| | | | | |
|--|---|--|---|---|
| Sample Type D=Dry C=Cored W=Washed JP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V. Stiff | SUMMARY: Earth Boring <u>52'</u> Rock Coring _____ Samples <u>16</u> HOLE NO <u>4</u> |
|--|---|--|---|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE _____
 HOLE NO. 4A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 COPIES SENT TO " OUR JOB NO. 71-130

| | | | |
|---|---|--|--|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>1/2</u> Hours _____ after _____ Hours | RODS - "AW" Type _____ Size I.D. <u>H</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>3" Piston Tube</u> CORE BAR _____ BIT _____ _____ <u>300#</u> _____ _____ <u>6"</u> _____ | Date _____ Time _____ START <u>3/18/71</u> _____ a.m. COMPLETE <u>3/19/71</u> _____ a.m. TOTAL HRS. _____ BORING FOREMAN <u>Peterson</u> INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|-----------|-----------|------------------------------|---------------------|---|------------|------------|----------------|
| | | | | From 0-6" | 6-12" | 12-18" | | | | No. | Pen | Rec. |
| | | | | | | | | | | | | |
| | | <u>25'-25'4"</u> | <u>PRESS</u> | | | | | | | | | |
| | | <u>25'4"-26'5"</u> | <u>UP</u> | <u>20</u> | <u>20</u> | | | <u>24'</u> | <u>Yellow brown SILT</u> | <u>UP1</u> | <u>14"</u> | <u>13"</u> |
| | | <u>29'-30'6"</u> | <u>UP</u> | <u>20</u> | <u>14</u> | <u>16</u> | | | | <u>UP2</u> | <u>18"</u> | <u>14 1/2"</u> |
| | | <u>33'-34'</u> | <u>UP</u> | <u>PRESS</u> | | | | | | | | |
| | | <u>34'-35'6"</u> | <u>D</u> | <u>7</u> | <u>8</u> | <u>10</u> | <u>Wet V-stiff</u> | <u>35'6"</u> | <u>Blue gray SILT</u> | <u>UP3</u> | <u>12"</u> | <u>10"</u> |
| | | | | | | | | | <u>Bottom of boring 35'6"</u> | <u>1</u> | <u>18"</u> | <u>12"</u> |

GROUND SURFACE TO 24' USED H "CASING: THEN roller bit & S/S to 35'6"

| | | | |
|--|---|--|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
|--|---|--|--|

SUMMARY:
 Earth Boring 35'6"
 Rock Coring _____
 Samples 1
 HOLE NO. 4A

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 5
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | Rods- "AW" | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|------------------------|--------|---------------|-----------|--------------------------------|------------|
| At <u>9'0"</u> | after _____ Hours | Type _____ | _____ | <u>S/S</u> | _____ | START <u>3/11/71</u> | _____ a.m. |
| _____ | after _____ Hours | Size I.D. <u>BX</u> | _____ | <u>1 3/8"</u> | _____ | COMPLETE <u>3/11/71</u> | _____ a.m. |
| | | Hammer Wt. <u>300#</u> | _____ | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | _____ | <u>30"</u> | _____ | BORING FOREMAN <u>Peterson</u> | |
| | | | | | | INSPECTOR <u>Debbie Huff</u> | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 5 | | 0'-1' | D | 4 | 13 | | Wet M.dense | 1' | Gray F-M SAND & gravel FILL | 1 | 12" | 8" |
| 10 | | 1'-1'6" | D | | | 23 | Dry | 1'6" | Black COAL FILL | 1A | 6" | 6" |
| 21 | | 1'6"-2' | D | | | 24 | M.dense | | Yellow brown fine to medium SAND, trace fine to coarse gravel & silt FILL | 1B | 6" | 6" |
| 20 | | | | | | | " | | | | | |
| 20 | | | | | | | " | | | | | |
| 9 | | 5'-7' | D | 12 | 12 | 12 | " | 7.5' | | 2 | 24" | 22" |
| 15 | | | | 12 | | | " | | | | | |
| 18 | | | | | | | " | | | | | |
| 15 | | | | | | | " | 9' | Brown fine SAND & gravel FILL | | | |
| 13 | | | | | | | Wet medium dense | | | | | |
| 3 | | 10'-12' | D | 6 | 6 | 6 | Wet medium dense | 12' | Brown fine to medium SAND, trace fine gravel & silt | 3 | 24" | 12" |
| 8 | | | | 5 | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 4 | | 15'-17' | D | 4 | 3 | 4 | Wet loose | 19' | Brown fine SAND, little silt, trace coarse sand | 4 | 24" | 12" |
| 6 | | | | 4 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 5 | | 20'-21'6" | D | 5 | 8 | 9 | Wet M.dense | 21'6" | Gray brown fine to coarse SAND, lit. F-M gravel, T/silt | 5 | 18" | 14" |
| 7 | | 21'6"-22' | D | 8 | | | | | | 5A | 6" | 3" |
| 19 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 55 | | | | | | | Wet medium dense | | Brown fine to coarse SAND some fine to coarse gravel trace silt & cobbles | | | |
| 17 | | 25'-27' | D | 13 | 9 | 9 | Wet medium dense | | | 6 | 24" | 12" |
| 16 | | | | 9 | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 17 | | 30'-32' | D | 17 | 20 | 23 | Wet dense | | | 7 | 24" | 18" |
| 40 | | | | 25 | | | | | | | | |
| 75 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | |
| 31 | | 35'-37' | D | 20 | 22 | 18 | " | | | 8 | 24" | 18" |
| 41 | | | | 30 | | | | 37' | | | | |
| 110 | | | | | | | | | | | | |
| 230 | | | | | | | | | | | | |
| 100 | | | | | | | | | Brown SILT W/layers of fine to coarse sand, trace fine gravel | | | |

GROUND SURFACE TO 50' USED BX "CASING: THEN S/S to 52'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V. Stiff

SUMMARY:
 Earth Boring 52'
 Rock Coring _____
 Samples 15
 HOLE NO. 5

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 5

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1

ADDRESS Same as #1

PROJECT NAME _____

LOCATION _____

PORT SENT TO _____

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. _____

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|--|-------------------|-------------------|---------|-----------|-------------------------|------------|
| At <u>Same as #1</u> after _____ Hours | Type _____ | <u>Same as #1</u> | _____ | _____ | START <u>Same as #1</u> | _____ a.m. |
| _____ after _____ Hours | Size I.D. _____ | _____ | _____ | _____ | COMPLETE _____ | _____ p.m. |
| | Hammer Wt. _____ | _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | Hammer Fall _____ | _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | _____ | _____ | _____ | INSPECTOR _____ | |
| | | _____ | _____ | _____ | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|-------|------------------------------|---|---|--------|-----|------|
| | | | | From 0-6 | To | | | | | No. | Pen | Rec. |
| | | | | | 6-12 | 12-18 | | | | | | |
| 10 | 56 | 40'-42.5' | D | 48 | 45 | 38 | Wet V. Hard | Brown SILT W/layers of fine to crs. sd. trace fine gravel | 9 | 30" | - | |
| | 63 | | | 40 | 36 | | | | | | | |
| | 159 | | | | | | Wet very dense | Blue-gray DECOMPOSED BOULDER TILL | 10 | 24" | - | |
| | 339 | 43'-45' | D** | 110 | per ft. | | | | | | | |
| | 130 | | | 84 | | | | | | | | |
| 10 | 74 | 45'-47' | D | 24 | 41 | 43 | " | Brown fine to coarse SAND & fine to coarse gravel, some silt, trace cobbles | 11 | 24" | 16" | |
| | 170 | | | 48 | | | | | | | | |
| | 259 | | | | | | | | | | | |
| | 243 | | | | | | | | | | | |
| | 161 | | | | | | | | | | | |
| 55 | | 50'-52' | D | 35 | 39 | 43 | " | Bottom of boring 52' | 12 | 24" | 12" | |
| | | | | 41 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | D** | denotes used | | | | | | | | |
| | | | | 300# wt on open end | | | | | | | | |
| | | | | A rod sampler | | | | | | | | |

| | | | |
|---|---|--|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: _____ THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston P=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff |
| | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 6
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | | | RODS - "AW" | CASING | SAMPLER | CORE BAR. | Date | | Time | |
|---------------------------|--------|-------|------|------------------------|--------|---------------|-----------|---------|----------|------------|----------------|
| At | after | Hours | Type | | | | | START | COMPLETE | TOTAL HRS. | BORING FOREMAN |
| 9' | | 1/2 | | Size I.D. <u>HW</u> | | <u>S/S</u> | | 3/16/71 | | | a.m. |
| 60' | casing | | | Hammer Wt. <u>300#</u> | | <u>1 3/8"</u> | | 3/17/71 | | | p.m. |
| | | | | Hammer Fall <u>24"</u> | | <u>30"</u> | BIT | | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 10 | | 0'-6" | D | 4 | | | dry loose | 0.5' | Lt. Br. fine SAND, T/F/Gravel | 1 | 6" | 6" |
| 70 | | 6"-1'6" | D | | 20 | 30 | Dry | | Black SAND, cinders, concrete, bricks FILL | 1A | 12" | 12" |
| 80 | | | | | | | V. dense | 3.0' | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 5 | | 5'-6'6" | D | 2 | 2 | 2 | Dry loose | | Dark brown CINDERS, ashes, bricks FILL | 2 | 18" | 18" |
| 5 | | | | | | | | | | | | |
| 2 | | | | | | | | 8' | | | | |
| 7 | | 8'-9'6" | D | 3 | 3 | 4 | Moist loose | 9'6" | Gray brown F-C SAND, lit. F-M gravel & silt | 3 | 18" | 12" |
| 10 | | | | | | | Wet loose | | Blue gray fine to coarse SAND, some fine to coarse gravel, little silt (oil odor) FILL | 4 | 18" | 12" |
| 5 | | 10'-11'6" | D | 5 | 5 | 4 | | | | | | |
| 8 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | 15' | | | | |
| 18 | | | | | | | | | | | | |
| 25 | | 15'-16'6" | D | 7 | 9 | 8 | Wet medium dense | 19' | Gray fine SAND, little silt (oil odor noted) FILL | 5 | 18" | 18" |
| 60 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | 20'-22' | D | 1 | - | 1 | Wet soft | | Gray ORGANIC SILT, trace sea shells & peat | 6 | 24" | 18" |
| 14 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 9 | | 25'-27' | D | 2 | 2 | 2 | " | | | 7 | 24" | 18" |
| 10 | | | | 2 | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 10 | | 30'-32' | D | 2 | 2 | 1 | " | | | 8 | 24" | 18" |
| 12 | | | | 2 | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 12 | | | | | | | | 35' | | | | |
| 12 | | 35'-37' | D | 1 | 1 | 1 | " | | Dark brown PEAT, some wood trace fine sand | 9 | 24" | 18" |
| 12 | | | | 1 | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 14 | | | | | | | Wet | 39' | | | | |
| 14 | | 39'-40'6" | D | 3 | 3 | 4 | M/stiff | | Blue-gray SILT, & Dk. Br. PEAT | 10 | 18" | 18" |

GROUND SURFACE TO 60' USED HW "CASING: THEN S/S to 61.5'

| | | | |
|---------------------------------|------------------|---|---------------------------|
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Earth Boring <u>61.5'</u> |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | Samples <u>16</u> |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | HOLE NO <u>6</u> |
| | | 50+ Very Dense | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 6
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 PORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-130

| | | | | | | | |
|---------------------------|--|-------------------|-----------------|---------------------------|-----------------|------------------------------|----------------------|
| GROUND WATER OBSERVATIONS | At <u>Same as #1</u> after _____ Hours | Type _____ | CASING _____ | SAMPLER <u>Same as #1</u> | CORE BAR. _____ | Date _____ | Time _____ |
| | | | Size I.D. _____ | Hammer Wt. _____ | BIT _____ | START <u>Same as #1</u> o.m. | COMPLETE _____ p.m. |
| | after _____ Hours | Hammer Fall _____ | | | | TOTAL HRS. _____ | BORING FOREMAN _____ |
| | | | | | | INSPECTOR _____ | SOILS ENGR. _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From C-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 23 | | | | | | | Wet | 40.5' | Blue gray SILT | | | |
| 32 | | 40.5'-42' | D | 6 | 9 | 12 | M.dense | 42.5' | Blue gray fine SAND, little silt, trace fine gravel | 11 | 18" | 12" |
| 43 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 35 | | 45'-47' | D | 7 | 14 | 18 | Wet dense | | Brown gray fine to coarse SAND, some fine to coarse gravel, trace silt | 12 | 24" | 18" |
| 45 | | | | 18 | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 35 | | 50'-51'6" | D | 17 | 18 | 17 | " | | | 13 | 18" | 12" |
| 39 | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 43 | | | | | | | | 54' | | | | |
| 60 | | | | | | | Wet medium dense | | Blue gray fine to coarse SAND, little fine to medium gravel & silt | 14 | 18" | 6" |
| 35 | | 55'-56'6" | D | 9 | 9 | 10 | | 57' | | | | |
| 39 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 45 | | 60'-61'6" | D | 18 | 18 | 18 | Wet dense | 61'6" | Blue gray fine to coarse SAND, little fine to coarse gravel, trace silt | 15 | 18" | 12" |
| | | | | | | | | | Bottom of boring 61'6" | | | |

| | | | | |
|---------------------------------|------------------|---|----------------------|---------------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: _____ | THEN _____ | SUMMARY: |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Cohesionless Density | Earth Boring <u>61'6"</u> |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 Loose | Cohesive Consistency | Rock Coring |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | 0-4 Soft 30+ Hard | Samples <u>16</u> |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | 4-8 M/Stiff | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | 8-15 Stiff | |
| | | | 15-30 Very Stiff | HOLE NO. <u>6</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE _____
 HOLE NO. 7
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|--------------------|--------|---------------|-----------|--------------------------------|------|
| At <u>None</u> | after _____ | Hours | Rods - "AW" | | | | START <u>3/17/71</u> | a.m. |
| | | | Type _____ | | <u>S/S</u> | | COMPLETE <u>3/17/71</u> | p.m. |
| | | | Size I.D. _____ | | <u>1 3/8"</u> | | TOTAL HRS. _____ | |
| | | | Hammer Wt. _____ | | <u>140#</u> | BIT | BORING FOREMAN <u>Peterson</u> | |
| | | | Hammer Fall _____ | | <u>30"</u> | | INSPECTOR _____ | |
| | | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|----------|----------|------------------------------|-------------------------------|---|------------|----------|------|
| | | | | From 0-6 | To | | | | | No. | Pen | Rec. |
| | | | | | 6-12 | 12-18 | | | | | | |
| | | <u>0'-2'</u> | <u>D</u> | <u>4</u> | <u>4</u> | <u>6</u> | <u>Moist medium dense</u> | | <u>1</u> | <u>24"</u> | <u>-</u> | |
| | | | | <u>10</u> | | | | <u>5.5'</u> | | | | |
| | | | | | | | | <u>Note: Moved to hole 7A</u> | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | |
|---------------------------------|------------------|---|--------------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Earth Boring <u>5.5'</u> |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Rock Coring _____ |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Samples <u>1</u> |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |

HOLE NO. 7

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE _____
 HOLE NO. 7A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

To Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 PORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | Rods-"AW" Type | CASING HW | SAMPLER S/S | CORE BAR. | Date | Time | |
|---------------------------|------------------------|-------------------|--------------|----------------|-----------|--------------------------------|------------|--------------|
| At <u>8'</u> | after <u>1/2</u> Hours | | | | | Size I.D. | Hammer Wt. | Hammer Fall |
| <u>40' Casing</u> | after _____ Hours | | <u>300#</u> | <u>24"</u> | | COMPLETE <u>3/25/71</u> | _____ | a.m. p.m. |
| | | | | | | TOTAL HRS. | _____ | |
| | | | | | | BORING FOREMAN <u>Peterson</u> | | |
| | | | | | | INSPECTOR <u>Debbie Huff</u> | | |
| | | | | | | SOILS ENGR. | | |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc. | SAMPLE | | |
|--------------------------------|-------------------------------|----------------------|----------------------------|------|-------|---------------------------------------|---------------------------|---|--------|-----|------|
| | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 10 | 0'-2' | D | 5 | 10 | 8 | Dry | 5' | Brown fine to medium SAND, little gravel, trace silt layers of coal FILL | 1 | 24" | 24" |
| 20 | | | 8 | | | medium | | | | | |
| 15 | | | | | | dense | | | | | |
| 12 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 10 | 5'-7' | D | 3 | 3 | 10 | Wet | 13' | Blue-gray fine to coarse SAND, some fine to coarse gravel, little silt (oil odor) FILL | 2 | 24" | 18" |
| 8 | | | 10 | | | medium | | | | | |
| 8 | | | | | | dense | | | | | |
| 25 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 15 | 10'-12' | D | 5 | 6 | 10 | " | 19.5' | Blue-gray fine to medium SAND, trace silt & fine gravel | 3 | 24" | 12" |
| 25 | | | 12 | | | | | | | | |
| 35 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
| 40 | | | | | | | | | | | |
| 8 | 15'-17' | D | 7 | 6 | 6 | " | 24' | Blue gray fine to coarse SAND, some fine to coarse gravel, trace silt & cobbles | 4 | 24" | 12" |
| 10 | | | 5 | | | | | | | | |
| 12 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 28 | | | | | | | | | | | |
| 12 | 20'-22' | D | 17 | 14 | 14 | " | 42' | Bottom of boring 42' | 5 | 24" | 18" |
| 16 | | | 11 | | | | | | | | |
| 20 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| 20 | 25'-27' | D | 19 | 27 | 27 | Wet very dense | 42' | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt & cobbles | 6 | 24" | 18" |
| 30 | | | 28 | | | | | | | | |
| 65 | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| 35 | | | | | | | | | | | |
| 28 | 30'-32' | D | 15 | 20 | 24 | Wet dense | 42' | Bottom of boring 42' | 7 | 24" | 12" |
| 35 | | | 23 | | | | | | | | |
| 50 | | | | | | | | | | | |
| 60 | | | | | | | | | | | |
| 35 | | | | | | | | | | | |
| 18 | 35'-37' | D | 20 | 25 | 16 | " | 42' | Bottom of boring 42' | 8 | 24" | 12" |
| 38 | | | 25 | | | | | | | | |
| 64 | | | | | | | | | | | |
| 75 | | | | | | | | | | | |
| 90 | 40'-42' | D | 40 | 25 | 28/40 | " | | | | | 9 |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO <u>40'</u> | USED <u>HW</u> | "CASING: THEN <u>S/S to 42'</u> | SUMMARY: Earth Boring <u>42'</u> Rock Coring Samples <u>9</u> |
| Sample Type D=Dry C=Cored W=Washed P=Undisturbed Piston T=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff | HOLE NO. <u>7A</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 8
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | Rods-"AW" Type | CASING Size I.D. | SAMPLER Hammer Wt. | CORE BAR. BIT | Date | | Time |
|---------------------------|-----------------|-------------------|---------------------|-----------------------|------------------|---------|----------|--------------|
| At | after | | | | | START | COMPLETE | |
| 9'6" | after 1/2 Hours | | HW | 300# | | 3/22/71 | 3/23/71 | a.m. p.m. |
| 60' Casing | | | | | | | | |
| 8'6" | after 1/2 Hours | | 24" | 140# | | | | a.m. p.m. |
| No Casing | | | | | | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 5 | | 0'-1'6" | D | 3 | 3 | 3 | Dry loose | | Black ashes, coal, bricks concrete, sand & gravel (fill) | 1 | 18" | 12" |
| 3 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 1 | | 5'-6'6" | D | 3 | 2 | 1 | " | 7' | | 2 | 18" | 6" |
| - | | | | | | | | | | | | |
| - | | | | | | | | | | | | |
| 1 | | 10'-11'6" | D | 3 | 3 | 4 | Wet loose | | Gray brown fine to coarse SAND, some fine to coarse gravel, little silt (oil odor) | 3 | 18" | 12" |
| 6 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 25 | | | | | | | Wet medium dense | | | | | |
| 6 | | 15'-16'6" | D | 7 | 4 | 9 | | | | 4 | 18" | 12" |
| 6 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 1 | | 20'-22' | D | 13 | 9 | 8 | " | | Running up casing 18" | 5 | 24" | 6" |
| 15 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 1 | | 25'-27' | D | 10 | 20 | 10 | " | | | 6 | 24" | 6" |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 6 | | 30'-32' | D | 10 | 7 | 7 | " | | | 7 | 24" | 18" |
| 17 | | | | | | | | | | | | |
| 25 | | | | | | | | 33' | | | | |
| 36 | | | | | | | | | | | | |
| 44 | | | | | | | Wet very stiff | | Gray brown SILT, some fine to coarse sand, trace fine gravel | - | 24" | 0" |
| 8 | | 35'-37' | D | 16 | 12 | 10 | " | | | 8 | 24" | 10" |
| 6 | | | | | | | | | | | | |
| 16 | | 37'-39' | D | 9 | 10 | 14 | " | | | | | |
| 26 | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | |

GROUND SURFACE TO 60' USED HW "CASING: THEN S/S to 62'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 62'
 Rock Coring _____
 Samples 14
 HOLE NO. 8

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 8
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | | | |
|-------------------------------------|-------------|-------------------|-----------|-------------------|----------|
| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR. | Date | Time |
| | | | | START | COMPLETE |
| <u>Same as #1</u> after _____ Hours | Type | <u>Same as #1</u> | _____ | <u>Same as #1</u> | _____ |
| _____ after _____ Hours | Size I.D. | _____ | _____ | TOTAL HRS. | _____ |
| | Hammer Wt. | _____ | _____ | BORING FOREMAN | _____ |
| | Hammer Fall | _____ | _____ | INSPECTOR | _____ |
| | | | BIT | SOILS ENGR. | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From- To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 13 | | 40'-42' | D | 18 | 19 | 12 | Wet dense | | Yellow brown SILT & fine to coarse sand, trace gravel | 9 | 24" | 12" |
| 16 | | | | 22 | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 23 | | | | | | | Wet medium dense | | Running sand 42" layers of silty sand | - | 24" | 0" |
| 7 | | 45'-47' | D | 5 | 7 | 12 | Wet | | | | | |
| 10 | | | | 14 | | | | | | | | |
| 12 | | 47'-49' | D | 9 | per ft. | | Wet | | | 10 | 24" | 24" |
| 15 | | (5' spoon) | | 21 | | | very dense | 49' | | | | |
| 14 | | 49'-50' | D | 65 | | | Wet dense | | Brown F-M silty SAND & fine to crs. gravel (Shale Frags) | 11 | 12" | 12" |
| 20 | | 50'-52' | D | 19 | 21 | 9 | Wet M.dense | 50' | | 12 | 24" | 12" |
| 21 | | | | 9 | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 32 | | | | | | | Wet very dense | | Brown fine to coarse SAND, some fine to coarse gravel trace silt | | | |
| 12 | | 55'-57' | D | 19 | 21 | 35 | | | | 13 | 24" | 18" |
| 37 | | | | 35 | | | | | | | | |
| 47 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| | | 60'-62' | D | 31 | 26 | 39 | " | 62' | | 14 | 24" | 10" |
| | | | | 19 | | | | | | | | |
| | | | | | | | | | Bottom of boring 62' | | | |

| | | | |
|---------------------------------|------------------|---|--------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: _____ | THEN: _____ |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
| D=Dry C=Cored W=Washed | Trace 0 to 10% | Cohesionless Density | Earth Boring _____ |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | Samples _____ |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |
| | | | HOLE NO. <u>8</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 9
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 PORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | Rods-"AW" Type | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------------|------------------------|--------|---------------|-----------|-----------------------------------|------|
| At <u>8'0"</u> | after <u>16</u> Hours | | | | | | |
| <u>50'</u> | casing | Size I.D. <u>HW</u> | | <u>S/S</u> | | <u>3/25/71</u> | |
| | after _____ Hours | Hammer Wt. <u>300#</u> | | <u>1 3/8"</u> | | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | | <u>140#</u> | BIT | BORING FOREMAN <u>E. Peterson</u> | |
| | | | | <u>30"</u> | | INSPECTOR <u>Debbie Huff</u> | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|-----------|-----------|------------------------------|---------------------|---|----------------|------------|------------|------------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| | <u>2</u> | <u>0'-1'</u> | <u>D</u> | <u>2</u> | <u>9</u> | | <u>Dry</u> | <u>1'</u> | <u>Brown F-M SAND & cinders</u> | <u>FILL 1</u> | <u>12"</u> | <u>12"</u> | |
| | <u>7</u> | <u>1'-2'</u> | <u>D</u> | <u>13</u> | <u>10</u> | | <u>medium dense</u> | | <u>Yellow brown fine to coarse SAND, some fine to coarse gravel, trace silt</u> | <u>FILL 1A</u> | <u>12"</u> | <u>12"</u> | |
| | <u>27</u> | | | | | | | | | | | | |
| | <u>26</u> | | | | | | | | | | | | |
| | <u>15</u> | | | | | | | | | | | | |
| | <u>18</u> | <u>5'-7'</u> | <u>D</u> | <u>10</u> | <u>6</u> | <u>7</u> | <u>"</u> | | | | <u>2</u> | <u>24"</u> | <u>24"</u> |
| | <u>26</u> | | | <u>12</u> | | | | | | | | | |
| | <u>32</u> | | | | | | | | | | | | |
| | <u>46</u> | | | | | | | | | | | | |
| | <u>50</u> | | | | | | <u>Wet medium dense</u> | | | | | | |
| | <u>20</u> | <u>10'-12'</u> | <u>D</u> | <u>14</u> | <u>16</u> | <u>13</u> | | | | | <u>3</u> | <u>24"</u> | <u>18"</u> |
| | <u>25</u> | | | <u>12</u> | | | | | | | | | |
| | <u>21</u> | | | | | | | | | | | | |
| | <u>18</u> | | | | | | | <u>14'</u> | | | | | |
| | <u>14</u> | | | | | | <u>Wet loose</u> | | <u>Yellow brown fine to medium SAND, some silt, trace fine gravel (fibers).</u> | | | | |
| | <u>11</u> | <u>15'-17'</u> | <u>D</u> | <u>5</u> | <u>3</u> | <u>1</u> | | | | | <u>4</u> | <u>24"</u> | <u>18"</u> |
| | <u>13</u> | | | <u>3</u> | | | | | | | | | |
| | <u>17</u> | | | | | | | | | | | | |
| | <u>21</u> | | | | | | | | | | | | |
| | <u>20</u> | | | | | | | <u>20'</u> | | | | | |
| | <u>12</u> | <u>20'-22'</u> | <u>D</u> | <u>4</u> | <u>4</u> | <u>6</u> | <u>"</u> | | <u>Yellow brown fine to medium SAND, trace silt</u> | | <u>5</u> | <u>24"</u> | <u>18"</u> |
| | <u>14</u> | | | <u>4</u> | | | | | | | | | |
| | <u>17</u> | | | | | | | | | | | | |
| | <u>20</u> | | | | | | | <u>24'</u> | | | | | |
| | <u>22</u> | | | | | | <u>Wet medium dense</u> | | <u>Yellow-brown fine to coarse SAND, little fine to coarse gravel, trace silt & cobbles</u> | | <u>6</u> | <u>24"</u> | <u>18"</u> |
| | <u>19</u> | <u>25'-27'</u> | <u>D</u> | <u>29</u> | <u>19</u> | <u>15</u> | | | | | | | |
| | <u>62</u> | | | <u>12</u> | | | | | | | | | |
| | <u>48</u> | | | | | | | | | | | | |
| | <u>50</u> | | | | | | | | | | | | |
| | <u>55</u> | | | | | | <u>Wet dense</u> | | | | | | |
| | <u>20</u> | <u>30'-32'</u> | <u>D</u> | <u>21</u> | <u>22</u> | <u>25</u> | | | | | <u>7</u> | <u>24"</u> | <u>18"</u> |
| | <u>95</u> | | | <u>23</u> | | | | | | | | | |
| | <u>53</u> | | | | | | | | | | | | |
| | <u>33</u> | | | | | | | <u>34'</u> | | | | | |
| | <u>27</u> | | | | | | <u>Wet medium dense</u> | | <u>Yellow-brown fine to medium SAND, trace silt & mica</u> | | <u>8</u> | <u>24"</u> | <u>18"</u> |
| | <u>13</u> | <u>35'-37'</u> | <u>D</u> | <u>11</u> | <u>9</u> | <u>6</u> | | | | | | | |
| | <u>20</u> | | | <u>8</u> | | | | | | | | | |
| | <u>33</u> | | | | | | | | | | | | |
| | <u>30</u> | | | | | | | | | | | | |
| | <u>25</u> | | | | | | | | | | | | |

GROUND SURFACE TO 50' USED HW "CASING: THEN S/S to 52'

| | | | | |
|--|---|--|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>52'</u> Rock Coring _____ Samples <u>12</u> |
|--|---|--|---|---|

HOLE NO 9

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE _____

HOLE NO. 10

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Gas Tank Installation

LOCATION Providence, R.I.

PORT SENT TO above

PROJ. NO. _____

AMPLES SENT TO "

OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|------------------------|---------------|-----------|--------------------------------|------------|
| At <u>8'2"</u> | after <u>1/2</u> Hours | Rods- " <u>AW</u> " | <u>S/S</u> | _____ | START <u>3/23/71</u> | _____ a.m. |
| <u>45'</u> casing | | Type _____ | <u>1 3/8"</u> | _____ | COMPLETE <u>3/23/71</u> | _____ a.m. |
| | after _____ Hours | Size I.D. <u>HW</u> | <u>140 #</u> | _____ | TOTAL HRS. _____ | |
| | | Hammer Wt. <u>300#</u> | <u>24"</u> | BIT _____ | BORING FOREMAN <u>Peterson</u> | |
| | | Hammer Fall _____ | <u>30"</u> | _____ | INSPECTOR <u>Debbie Huff</u> | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-----------------------|-----------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 6 | 0'-2' | D | 4 | 5 | 5 | Dry medium dense | | 1 | 24" | 12" | |
| 13 | | | 7 | | | | | | | | |
| 15 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | 6' | | | | |
| 8 | | | | | | | 6.5' | concrete | | | |
| 3 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 1 | | | | | | Wet loose | | | | | |
| 2 | 10'-12' | D | 3 | 2 | 3 | | 12' | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt | - | 24" | 6 |
| 8 | | | 4 | | | | | | | | |
| 13 | 12'-14' | D | 7 | 11 | 21 | Wet M.dense | | Gray brown fine to coarse SAND, some fine to coarse gravel trace cobbles & silt | 2 | 36" | 18" |
| 18 | | | 21 | | | | | | | | |
| 19 | 14'-15' | | 75' | | | | | | | | |
| 13 | 15'-17' | D | 21 | 21 | 13 | " | | | 3 | 24" | 18" |
| 18 | | | 12 | | | | | | | | |
| 22 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 12 | 20'-22' | D | 15 | 7 | 8 | " | | | 4 | 24" | 12" |
| 16 | | | 11 | | | | | | | | |
| 18 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 11 | 25'-27' | D | 10 | 8 | 10 | " | | | 5 | 24" | 12" |
| 17 | | | 9 | | | | | | | | |
| 13 | | | | | | | | | | | |
| 35 | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| 24 | 30'-32' | D | 10 | 13 | 9 | " | | | 6 | 24" | 12" |
| 22 | | | 9 | | | | | | | | |
| 27 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 33 | | | | | | Wet very dense | | | | | |
| 15 | 35'-37' | D | 29 | 18 | 32 | | | | 7 | 24" | 12" |
| 24 | | | 29 | | | | | | | | |
| 44 | | | | | | | | | | | |
| 40 | | | | | | | | | | | |
| 38 | | | | | | | | | | | |

GROUND SURFACE TO 55' USED HW "CASING: THEN S/S to 57'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 57'
 Rock Coring _____
 Samples 11

HOLE NO. 10

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 10
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 PORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|--|--|--|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours _____ after _____ Hours | CASING SAMPLER CORE BAR. Type <u>Same as #1</u> Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | Date _____ Time _____ START <u>Same as #1</u> a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|--|--|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|--|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 23 | | 40'-42' | D | 18 | 12 | 18 | Wet dense | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt & cobbles | 8 | 24" | 12" | |
| 32 | | | | 20 | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 47 | | | | | | | Wet very dense | | | | | |
| 38 | | 45'-47' | D | 25 | 34 | 37 | | | | 9 | 24" | 18" |
| 52 | | | | 44 | | | | | | | | |
| 95 | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |
| 73 | | 50'-52' | D | 26 | 36 | 37 | " | | 10 | 24" | 18" | |
| 75 | | | | 52 | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | |
| 115 | | 55'-57' | D | 28 | 26 | 27 | " | | 11 | 24" | 18" | |
| | | | | 27 | | | | 57' | | | | |
| | | | | | | | | Bottom of boring 57' | | | | |

| | | | |
|---|---|---|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ "CASING: THEN _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. 10 |
|---|---|---|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 11
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO _____ above PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|-------------------------|---------------|-----------|--------------------------------|------------|
| At <u>8'8"</u> | after <u>1/2</u> Hours | Rods-"AW" Type _____ | <u>S/S</u> | _____ | START <u>3/26/71</u> | _____ a.m. |
| <u>55'</u> casing | | Size I.D. <u>HW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>3/26/71</u> | _____ a.m. |
| <u>7'4"</u> | after <u>1/2</u> Hours | Hammer Wt. <u>300#</u> | <u>140#</u> | _____ | TOTAL HRS. _____ | |
| No Casing | | Hammer Fall <u>24"</u> | <u>3"</u> | _____ | BORING FOREMAN <u>Peterson</u> | |
| | | | | BIT _____ | INSPECTOR <u>Debbie Huff</u> | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 7 | | 0'-5' | D | 6 | 8 | 8 | Dry medium dense | | Brown fine to coarse SAND, cinders, little fine gravel FILL | 1 | 60" | 36" |
| 8 | | | | 8 | | | | | | | | |
| 8 | | | | 11 per Foot | | | | | | | | |
| 4 | | | | 8 | " | " | | 4' | | | | |
| 4 | | | | 5 | " | " | | | | | | |
| 5 | | 5'-7' | D | 2 | 1 | 1 | Wet loose | | Black CINDERS & ashes FILL | 2 | 24" | 24" |
| 2 | | | | 1 | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 5 | | | | | | | " | | | | | |
| - | | 10'-12' | D | 2 | 1 | 2 | " | | | 3 | 24" | 12" |
| 3 | | | | 1 | | | | | | | | |
| 4 | | | | | | | | 13' | | | | |
| 4 | | | | | | | | | | | | |
| 3 | | 15'-17' | D | 3 | 2 | 1 | " | | Gray fine to coarse SAND, little fine to coarse gravel & silt FILL | 4 | 24" | 18" |
| 2 | | | | 1 | | | | 17' | | | | |
| 2 | | 18'-19' | W | | | | | 19' | Gray ORGANIC SILT & sand | 5 | | |
| 1 | | | | | | | | | | | | |
| 5 | | | | | | | | 21' | Gray fine to coarse SAND, trace F-M gravel, T/silt | 6 | 12" | 12" |
| 6 | | 20'-21' | D | 3 | 2 | | " | | | | | |
| 3 | | 21'-22' | D | 1 | 1 | | Wet soft | | Gray ORGANIC SILT, trace fine sand | 6A | 12" | 12" |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | 25' | | | | |
| 4 | | | | | | | | | | | | |
| 10 | | 25'-27' | D | 1 | 1 | 3 | " | | Gray ORGANIC SILT, little peat, & fine to crs. sand | 7 | 24" | 24" |
| 9 | | | | 4 | | | Wet | 27' | | | | |
| 9 | | 27'-28' | D | 22 | per ft. | | M.dense | 28' | Yel. Gray F.Sd., Lit F-M Gravel & Shale Frags, trace silt | 7A | 24" | 24" |
| 22 | | | | | | | | | | | | |
| 18 | | | | | | | Wet medium dense | | | | | |
| 20 | | 30'-32' | D | 22 | 18 | 12 | | | Yellow brown fine to coarse SAND, some fine to coarse gravel, trace silt & cobbles | 8 | 24" | 12" |
| 31 | | | | 16 | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 11 | | 35'-37' | D | 8 | 8 | 9 | " | | | 9 | 24" | 12" |
| 17 | | | | 10 | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO <u>60'</u> | USED <u>HW</u> | "CASING: THEN <u>S/S to 62'</u> | SUMMARY: Earth Boring <u>62'</u> Rock Coring _____ Samples <u>14</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50 + Very Dense 15-30 V-Stiff | HOLE NO. <u>11</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 11
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|--|--|--|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours _____ after _____ Hours | CASING SAMPLER CORE BAR. Type <u>Same as #1</u> Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | Date _____ Time _____ START <u>Same as #1</u> a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|--|--|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 18 | | 40'-42' | D | 8 | 8 | 11 | Wet medium dense | 45' | Gray fine to coarse SAND some fine to coarse gravel trace silt & cobbles | 10 | 24" | 12" |
| 14 | | | | 8 | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 18 | | 45'-47' | D | 10 | 12 | 12 | " | 48' | Gray fine to coarse SAND, trace fine to coarse gravel & silt | 11 | 24" | 18" |
| 21 | | | | 13 | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 16 | | 50'-52' | D | 6 | 8 | 9 | | 52' | Gray fine to coarse SAND, trace silt | 12 | 24" | 18" |
| 16 | | | | 10 | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 28 | | 55'-57' | D | 30 | 24 | 32 | Wet very dense | 62' | Yellow brown fine to coarse SAND & fine to coarse gravel, trace silt & cobbles | 13 | 24" | 6" |
| 41 | | | | 28 | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | |
| 60 | | 60'-62' | D | 25 | 17 | 20 | Wet dense | 62' | | 14 | 24" | 18" |
| | | | | 15 | | | | | | | | |
| | | | | | | | | | Bottom of boring 62' | | | |

| | | | |
|---|---|--|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN" 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. 11 |
|---|---|--|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____
 HOLE NO. B-20
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

TO same as 1 ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|--|---|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>48</u> Hours At _____ after _____ Hours | CASING SAMPLER CORE BAR. Type <u>same as 1</u> Size I. D. _____ Hammer Wt. _____ BIT _____ Hammer Fall _____ | Date _____ Time _____ START <u>same as 1</u> o.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|--|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|--------------------------------|---|-----------------------|------|------|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. | |
| 50 | 16 | 40'-42' | D | 8 | 15 | 17 | medium dense | 45' | -lost sample | -- | 24" | 0' | |
| | 15 | | | 13 | | | | | | | | | |
| | 24 | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | |
| | 29 | | | | | | | | | -lost water @45' | | | |
| 60 | 7 | 45'-47' | D | 6 | 10 | 11 | Wet medium dense | 51'0" | Brown medium to fine running SAND, trace fine gravel | 9 | 24" | 12' | |
| | 12 | | | 16 | | | | | | | | | |
| | 22 | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | |
| | 30 | | | | | | " | | | | | | |
| | 25 | 50'-51' | D | 7 | 11 | | | | | | 10 | 12" | 6" |
| | 20 | 51'-52' | D | 12 | 12 | | Wet very stiff | | | Gray SILT, trace clay | 10A | 12" | 6" |
| | 20 | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | |
| | 26 | 55'-57' | D | 8 | 7 | 10 | " | | | | 11 | 24" | 12' |
| 70 | 26 | | | 10 | | | | | | | | | |
| | 28 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 37 | | | | | | | 60'0" | | | | | |
| | 35 | 60'-62' | D | 19 | 30 | 93 | Wet very dense | 73'0" | Gray fine SAND & silt layers | 12 | 24" | 12' | |
| | 41 | | | 17 | | | | | | | | | |
| | 31 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 42 | 65'-67' | D | 8 | 10 | 18 | Wet dense | | | | 13 | 24" | 12' |
| 33 | | | 17 | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | |
| 80 | 44 | 70'-72' | D | 7 | 9 | 13 | " | | | 14 | 24" | 12' | |
| | 41 | | | 19 | | | | | | | | | |
| | 40 | | | | | | | | | | | | |
| | 52 | | | | | | | | | | | | |
| | 62 | | | | | | Wet very dense | | | | | | |
| | 72 | 75'-77' | D | 23 | 31 | 30 | | | Gray fine SAND, little silt | 15 | 24" | 12' | |
| | 90 | | | 38 | | | | | | | | | |
| 107 | | | | | | | | | | | | | |
| 109 | | | | | | | | | | | | | |
| 133 | | | | | | | | Gray running fine to med. SAND | | | | | |

| | | | | |
|---|---|---|--|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | _____ Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
|---|---|---|--|--|

HOLE NO. **B-20**

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3
 DATE _____
 HOLE NO. B-20
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

TO same as 1 ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | | |
|---|---|--|---|---|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>48</u> Hours At _____ after _____ Hours | CASING <u>same as 1</u> Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | SAMPLER _____ _____ _____ _____ | CORE BAR _____ _____ _____ BIT _____ | Date _____ Time _____ START <u>same as 1</u> COMPLETE _____ TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|------------------|------------------------------|-------------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | | | 72 | 80'-82' | D | | | | | | |
| 70 | | | 29 | | | | | | | | | |
| 92 | | | | | | | | | | | | |
| 135 | | | | | | | | | | | | |
| 130 | | | | | | | | | | | | |
| 77 | 85'-87' | D | 8 | 8 | 9 | wet medium dense | | 1724" | 12 | | | |
| 77 | | | 15 | | | | | | | | | |
| 65 | | | | | | | | | | | | |
| 69 | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | |
| 78 | | | | | | | | | | | | |
| 86 | 90'-92' | D | 5 | 8 | 8 | " | | 1824" | 13 | | | |
| 108 | | | 15 | | | | | | | | | |
| 164 | | | | | | | | | | | | |
| 120 | | | | | | | | | | | | |
| 144 | | | | | | | | | | | | |
| | 95'-97' | D | 6 | 5 | 6 | " | | 1924" | 12 | | | |
| | | | 14 | | | | | | | | | |
| | | | | | | | | | | | | |
| 100 | 98'-100' | D | 15 | 14 | 20 | wet dense | 100'0" | 2024" | 13 | | | |
| | | | 31 | | | | | | | | | |
| | | | | | | | | Bottom of boring 100'0" | | | | |

| | | | | |
|---|---|--|---|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50 + Very Dense | _____ Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
|---|---|--|---|--|

HOLE NO. B-20

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

DATE _____

HOLE NO. B-21

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.00

TO Prov. Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Prop. Tank LOCATION PROVIDENCE, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| | | | | |
|--|---|--|-----------------------------|---|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>14</u> Hours Casing - <u>90'</u> At _____ after _____ Hours | Rods - " <u>AW</u> " Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>7/27/71</u> a.m. COMPLETE <u>7/28/71</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>A. D'Atello</u> INSPECTOR _____ SOILS ENGR. <u>D. Andrews</u> |
|--|---|--|-----------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--|---|------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Res. | | |
| 10 | 4 | 0'-2' | D | 6 | 7 | 7 | Moist medium dense | 10' | Brown fine SAND & fine gravel, trace cinders FILL | 1 | 24" | 12" | | |
| | 6 | | | 6 | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | |
| | 6 | 5'-7' | D | 7 | 9 | 6 | " | | 15' | Brown-gray fine SAND & fine gravel, trace brick FILL (fuel odor noted) | 2 | 24" | 7" | |
| | 8 | | | 8 | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 20 | 7 | 10'-12' | D | 8 | 8 | 5 | | Wet medium dense | 15' | Brown gray fine SAND & fine gravel (fuel odor noted) FILL | 3 | 24" | 15" |
| | | 8 | | | 7 | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 1 | | 15'-17' | D | 1 | 2 | 2 | Wet medium stiff | 31'6" | Gray ORGANIC SILT, trace shells & fine sand | | 4 | 24" | 12" | |
| 2 | | | | 3 | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | |
| 30 | | 3 | 20'-22' | D | 1 | 2 | 1 | Wet soft | 31'6" | | Gray ORGANIC SILT, some fine to medium sand | 5 | 24" | 12" |
| | 4 | | | 2 | | | | | | | | | | |
| | 3 | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 6 | 25'-27' | D | 1 | 1 | 2 | " | 34' | | Gray ORGANIC SILT, some fine to medium sand | 6 | 24" | 12" | |
| | 7 | | | 1 | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 40 | 9 | 30'-32' | D | 2 | 3 | 7 | Wet V-stiff | | 38' | Gray fine to medium SAND, some fine gravel & org.silt | 7 | 24" | 12" |
| 13 | | | | 16 | | | Moist M.dense | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 36 | | 35'-37' | D | 8 | 15 | 15 | Wet medium dense | 38' | Gray medium to coarse running SAND | | 8 | 24" | 12" | |
| 21 | | | | 14 | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |

GROUND SURFACE TO 90' USED 2 1/2 "CASING: THEN sampled

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 95'6"
 Rock Coring _____
 Samples 18

HOLE NO. B-21

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-21

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS Same as #1
 LOCATION _____
 PROJ. NO. _____
 OUR JOB NO. _____

| | | |
|---|--|--|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>Same as #1</u> CORE BAR _____ Type _____ Size I. D. _____ Hammer Wt. _____ Hammer Fall _____ | Date _____ Time _____ START <u>Same as #1</u> a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|--|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|-------|-----------|------------------------------|---------------------|---|--------|--|-----|--|----|-----|
| | | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen | Rec | | | |
| 50 | 20 | 40'-42' | D | 11 | 13 | 12 | Wet dense | 44' | Gray-brown fine to coarse SAND, some fine gravel, trace silt | 9 | 24" | 12 | | | |
| | 21 | | | 10 | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | |
| | 14 | 45'-47' | D | 9 | 10 | 12 | Wet M. dense | | | | Running SAND (lost sample) Gray fine to coarse SAND, some fine gravel, trace silt | | 24" | 11 | |
| | 36 | | | 14 | | | | | | | | | | | |
| | 51 | | | | | | | | | | | | | | |
| | 48 | | | | | | | | | | | | | | |
| | 49 | | | | | | | | | | | | | | |
| 38 | 50'-52' | D | 9 | 18 | 12 | " | | | 10 | 24" | | 12 | | | |
| 28 | | | 11 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | | |
| 60 | 36 | 55'-57' | D | 16 | 31 | 50 | Wet very dense | | | 11 | | 24" | 11 | | |
| | 41 | | | 33 | | | | | | | | | | | |
| | 56 | | | | | | | | | | | | | | |
| | 56 | | | | | | | | | | | | | | |
| 60 | 36 | 60'-62' | D | 7 | 12 | 14 | Wet medium dense | 64' | | 12 | 24" | 12 | | | |
| | 33 | | | 15 | | | | | | | | | | | |
| | 49 | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | | | |
| | 39 | 65'-67' | D | 10 | 12 | 18 | Wet dense | | | 67' | Gray-brown running SAND | 13 | 24" | 11 | |
| | 45 | | | 18 | | | | | | | | | | | |
| | 58 | | | | | | | | | | | | | | |
| | 57 | | | | | | | | | | | | | | |
| 70 | 48 | | | | | | Wet very dense | | | | | 73' | Gray-medium to fine SAND & fine gravel, trace silt | 14 | 24" |
| | 42 | 70'-72' | D | 10 | 20 | 18 | | | | | | | | | |
| | 60 | | | 27 | | | | | | | | | | | |
| | 62 | | | | | | | | | | | | | | |
| | 47 | | | | | | | | | | | | | | |
| | 48 | | | | | | | | | | | | | | |
| | 47 | 75'-77' | D | 5 | 8 | 10 | Wet dense | | Gray medium to coarse SAND some fine gravel (running) | 15 | 24" | | | 12 | |
| | 38 | | | 15 | | | | | | | | | | | |
| | 46 | | | | | | | | | | | | | | |
| | 47 | | | | | | | | | | | | | | |
| 80 | 51 | | | | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| GROUND SURFACE TO _____ Sample Type _____ D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | THEN _____ Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
|---|---|---|---|

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____
HOLE NO. B-21

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 of 3
 DATE _____
 HOLE NO. B-21
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-297

| | | | |
|--|---|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>Same as #1</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>Type <u>Same as #1</u></p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p>SAMPLER _____</p> <p>CORE BAR _____</p> <p>BIT _____</p> | <p>Date _____ Time _____</p> <p>START <u>Same as #1</u> a.m. p.m.</p> <p>COMPLETE _____</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|---------------------|-------------------------|------|----------------|------------------------------|--|---|--|-----|------|------|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | | |
| 90 | 54 | 80'-82' | D | 6 | 14 | 22 | Wet dense | 82' | Gray medium to coarse SAND some fine gravel (running) | 16 | 24 | '12" | | |
| | 57 | | | 21 | | | | | | | | | | |
| | 78 | | | | | | | | | | | | | |
| | 105 | | | | | | | | | | | | | |
| | 90 | | | | | | | | | | | | | |
| | 57 | 85'-87' | D | 8 | 10 | 15 | Wet dense | | 89' | Gray fine SAND, little silt (running sand) | 17 | 24 | '12" | |
| | 81 | | | 21 | | | | | | | | | | |
| | 92 | | | | | | | | | | | | | |
| | 111 | | | | | | | | | | | | | |
| | 121 | | | | | | | | | | | | | |
| | 90'-92' | D | 9 | 16 | 24 | Wet very dense | | Gray-brown fine to medium SAND, trace silt | | 18 | 24 | '15" | | |
| | | | 29 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | 95'-96'6" | D** | 12 | 18 | 22 | Wet dense | 96'6" | | | | | | | |
| | | | | | | | | Bottom of boring 96'6" | | | | | | |
| 100 | | | | | | | | | | | | | | |
| | | | D** Benders used | | | | | | | | | | | |
| | | | 300# wt on open end | | | | | | | | | | | |
| | | | AW rod sampler | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|--|--|----------------------|----------------------|------------|--------------------|------------------|-------------|-------------|------------|----------------|---------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | | | | | | | | | | |
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <table style="width: 100%;"> <tr> <td>Cohesionless Density</td> <td>Cohesive Consistency</td> </tr> <tr> <td>0-10 Loose</td> <td>0-4 Soft 30 + Hard</td> </tr> <tr> <td>10-30 Med. Dense</td> <td>4-8 M/Stiff</td> </tr> <tr> <td>30-50 Dense</td> <td>8-15 Stiff</td> </tr> <tr> <td>50+ Very Dense</td> <td>15-30 V-Stiff</td> </tr> </table> | Cohesionless Density | Cohesive Consistency | 0-10 Loose | 0-4 Soft 30 + Hard | 10-30 Med. Dense | 4-8 M/Stiff | 30-50 Dense | 8-15 Stiff | 50+ Very Dense | 15-30 V-Stiff |
| Cohesionless Density | Cohesive Consistency | | | | | | | | | | | |
| 0-10 Loose | 0-4 Soft 30 + Hard | | | | | | | | | | | |
| 10-30 Med. Dense | 4-8 M/Stiff | | | | | | | | | | | |
| 30-50 Dense | 8-15 Stiff | | | | | | | | | | | |
| 50+ Very Dense | 15-30 V-Stiff | | | | | | | | | | | |
| | | <p>SUMMARY:</p> <p>Earth Boring _____</p> <p>Rock Coring _____</p> <p>Samples _____</p> | | | | | | | | | | |
| | | HOLE NO. B-21 | | | | | | | | | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE _____

HOLE NO. B-22

LINE & STA. _____

OFFSET _____

SURF. ELEV. 8.00

TO Providence Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | | RODS - "AW" | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|------------------|-------|--|-------------|---------------|---------------|----------|----------------------------------|------|
| At <u>9'2"</u> | after <u>1/2</u> | Hours | | Type | | <u>S/S</u> | | START <u>7/26/71</u> | a.m. |
| <u>casing - 65'</u> | | | | Size I.D. | <u>2 1/2"</u> | <u>1 3/8"</u> | | COMPLETE <u>7/27/71</u> | p.m. |
| At <u>9'</u> | after <u>3/4</u> | Hours | | Hammer Wt. | <u>300#</u> | <u>140#</u> | BIT | TOTAL HRS. _____ | |
| <u>Hole open</u> | | | | Hammer Fall | <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>A. D'Alieo</u> | |
| | | | | | | | | INSPECTOR _____ | |
| | | | | | | | | SOILS ENGR. <u>D. Andrews</u> | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|---|------|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen. | Rec. | |
| 10 | 1 | 0'-2' | D | 4 | 5 | 4 | Moist loose | 15'0" | Black COAL & ash - FILL | 1 | 24" | 17" | |
| | 3 | | | 2 | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 20 | 1 | 5'-7' | D | 3 | 3 | 2 | " | 18'0" | Brown fine SAND & coal FILL (fuel odor noted) | 2 | 24" | 9" | |
| | 2 | | | 3 | | | | | | | | | |
| | 12 | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| 30 | 1 | 10'-12' | D | 1 | 1 | 1 | Wet loose | 23' | Brown fine SAND & fine gravel FILL (fuel odor noted) | 3 | 24" | 11" | |
| | 1 | | | 3 | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| | 1 | 15'-17' | D | 1 | 2 | 2 | Wet medium stiff | | | | Black ORGANIC SILT, some fine sand, trace fine gravel | 4 | 24" |
| 40 | 1 | | | 3 | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 3 | 20'-22' | D | 2 | 2 | 3 | Wet soft | | Dark gray ORGANIC SILT & fine sand | 5 | 24" | 12" | |
| | 4 | | | 5 | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 40 | 18 | 25'-27' | D | 4 | 5 | 8 | Wet medium dense | | Gray medium to coarse SAND, some fine to medium gravel little organic silt | 6 | 24" | 12" | |
| | 17 | | | 12 | | | | | | | | | |
| | 21 | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | |
| | 12 | | | | | | Wet loose | | | | | | |
| 40 | 9 | 30'-32' | D | 6 | 4 | 3 | Wet loose | 31' | | 7 | 24" | 10" | |
| | 11 | | | 4 | | | | | | | | | |
| | 12 | | | | | | | | | | | | |
| | 13 | | | | | | Wet medium stiff | | Dark gray ORGANIC SILT, trace shells | 8 | 24" | 12" | |
| | 13 | 35'-37' | D | 1 | 2 | 2 | | | | | | | |

GROUND SURFACE TO 70' USED 2 1/2" CASING: THEN S/S to 72'

| | | | |
|--|---|--|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
|--|---|--|---|

SUMMARY:
 Earth Boring 72'
 Rock Coring _____
 Samples 15
HOLE NO. B-22

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. B-22
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>Same as #1</u> CORE BAR _____ Type _____ Size I.D. _____ Hammer Wt. _____ BIT _____ Hammer Fall _____ | Date <u>Same as #1</u> Time _____ START _____ COMPLETE _____ TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|------------------|------------------------------|---|---|--------|-----|-----|----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| | | | | | | | | | | | | | |
| 50 | 26 | 40'-42' | D | 2 | 3 | 3 | Wet | 42' | Dark gray ORGANIC SILT trace shells | 9 | 24" | 12 | |
| | 25 | | | 20 | | | V-stiff | | | | | | |
| | 34 | | | | | | | | | | | | |
| | 47 | | | | | | | | | | | | |
| | 34 | | | | | | Wet dense | 49' | Brown medium to fine SAND | | | | |
| | 57 | 45'-47' | D | 16 | 15 | 12 | | | | | 10 | 24" | 13 |
| | 29 | | | 15 | | | | | | | | | |
| | 28 | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | |
| | 39 | | | | | | Wet medium dense | 59' | Brown fine to coarse SAND, some fine to medium gravel & silt | | | | |
| 21 | 50'-52' | D | 18 | 17 | 15 | | | | | 11 | 24" | 13 | |
| 32 | | | 14 | | | | | | | | | | |
| 39 | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | |
| 48 | | | | | | Wet medium dense | 59' | Brown fine to coarse SAND, some fine to medium gravel little silt | | | | | |
| 40 | 55'-57' | D | 7 | 12 | 13 | | | | | 12 | 24" | 11 | |
| 34 | | | 14 | | | | | | | | | | |
| 49 | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | |
| 60 | 47 | | | | | | Wet very dense | 63' | Gray-brown fine to coarse SAND; some medium to fine gravel & silt | | | | |
| | 56 | 60'-62' | D | 19 | 28 | 30 | | | | | 13 | 24" | 10 |
| | 64 | | | 24 | | | | | | | | | |
| | 43 | | | | | | | | | | | | |
| | 39 | | | | | | Wet dense | 67' | Brown medium to coarse running SAND, little fine gravel | | | | |
| | 48 | | | | | | | | | | | | |
| 39 | 65'-67' | D | 11 | 22 | 24 | | | | | 14 | 24" | 10 | |
| 49 | | | 22 | | | | | | | | | | |
| 52 | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | |
| 70 | 71 | | | | | | | 69' | Dk. gray F-H SAND, some silt & fine gravel | | | | |
| | | 70'-72' | D | 11 | 17 | 20 | " | 72' | Gray-brown fine to coarse SAND, little silt, trace fine gravel | 15 | 24" | 11 | |
| | | | | 20 | | | | | Bottom of boring 72' | | | | |
| 75 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

GROUND SURFACE TO 70' USED 2 1/2 "CASING: THEN S/S to 72'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 72
 Rock Coring _____
 Samples 15

HOLE NO. B-22

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Providence Gas Co., -Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-23
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.50

| | | | | |
|---|--|--|-----------------------------|---|
| GROUND WATER OBSERVATIONS At <u>7'8"</u> after <u>10</u> ^{min.} hrs. At _____ after _____ Hours | Rods-"AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>7/21/71</u> COMPLETE <u>7/23/71</u> TOTAL HRS. _____ BORING FOREMAN <u>Gomes</u> INSPECTOR <u>D. Andrews</u> SOILS ENGR. <u>D. Andrews</u> |
|---|--|--|-----------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|------------------|------------------------------|---|---|--|--|-----|-----|-----|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec | | |
| 10 | 5 | 0'-2' | D | 2 | 4 | 7 | Moist medium dense | 18' | Gray-black fine to coarse SAND, coal, ashes FILL | 1 | 24" | 9" | | |
| | 7 | | | 9 | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 5 | 5'-7' | D | 6 | 6 | 5 | " | | | 18' | Gray medium to coarse SAND, trace silt & fine to medium gravel | 2 | 24" | 10" |
| | 7 | | | 5 | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | |
| 3 | 10'-12' | D | 5 | 5 | 7 | " | 18' | Gray SILT & medium to coarse sand, some fine to medium gravel | 3 | | | 24" | 8" | |
| 6 | | | 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 9 | 15'-17' | D | 4 | 4 | 3 | Moist loose | | | 18' | Brown fine to coarse SAND some fine to medium gravel little silt | 4 | 24" | 6" | |
| 12 | | | 6 | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | |
| 11 | 20'-22' | D | 9 | 13 | 13 | Wet medium dense | 26' | Gray-brown coarse to fine SAND & gravel | | | 5 | 24" | 10" | |
| 13 | | | 16 | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 11 | 25'-27' | D | 5 | 14 | 12 | Wet dense | | | 26' | Gray-brown coarse to fine SAND & gravel | 6 | 24" | 7" | |
| 18 | | | 16 | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | |
| 7 | 30'-32' | D | 7 | 9 | 12 | Wet medium dense | 33'6" | Gray-brown coarse to fine SAND & gravel | | | 7 | 24" | 10" | |
| 11 | | | 16 | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 10 | 35'-37' | D | 8 | 8 | 8 | " | | | 33'6" | Gray-brown coarse to fine SAND & gravel | 8 | 24" | 4" | |
| 16 | | | 8 | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | |
| 40 | 18 | | | | | | | | | | | | | |

GROUND SURFACE TO 70' USED 2 1/2" CASING: THEN spoon

| | | | | |
|--|---|--|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>86'6"</u> Rock Coring _____ Samples <u>16</u> |
|--|---|--|---|---|

HOLE NO. B-23

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-23

LINE & STA. _____

OFFSET _____

SURF. ELEV. 7.50

TO Same as #1
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS Same as #1
 LOCATION _____
 PROJ. NO. _____
 OUR JOB NO. _____

| | | | | |
|---|--|--|-----------------------------|--|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours At _____ after _____ Hours | CASING _____ Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | SAMPLER <u>Same as #1</u> _____ _____ _____ | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>Same as #1</u> COMPLETE _____ TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|--|--|-----------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------------------|----------|------------------------------|---------------------|---|--------|-----|-----|----|-----|-----|
| | | | | From C-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | | | |
| 50 | 13 | 40'-42' | D | 12 | 10 | 9 | Wet medium dense | 50' | No Recovery Gray-brown coarse to fine SAND & gravel | - | 24" | 0" | | | |
| | 12 | | | 8 | | | | | | | | | | | |
| | 9 | 42'-44' | D | 8 | 11 | 10 | | | | | | | - | 24" | 0" |
| | 11 | | | 11 | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | |
| | 24 | 45'-47' | D | 7 | 9 | 11 | | | | | | | 9 | 24" | 10" |
| | 28 | | | 11 | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | |
| | 41 | | | | | | | | | | | | | | |
| 60 | 33 | 50'-52' | D | 50 | 70 | 41 | Moist very dense | 54' | Brown fine to medium SAND | 10 | 24" | 9" | | | |
| | 43 | | | 47 | | | | | | | | | | | |
| | 68 | | | | | | | | | | | | | | |
| | 65 | | | | | | | | | | | | | | |
| | 65 | | | | | | | | | | | | | | |
| | 36 | 55'-57' | D | 12 | 29 | 33 | | | | | | | 11 | 24" | 9" |
| | 53 | | | 48 | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | |
| | 58 | | | | | | | | | | | | | | |
| | 61 | | | | | | | | | | | | | | |
| 70 | 57 | 60'-62' | D | 16 | 27 | 34 | " | 64' | Brown fine to coarse SAND & silt, some fine to medium gravel | 12 | 24" | 6" | | | |
| | 52 | | | 41 | | | | | | | | | | | |
| | 64 | | | | | | | | | | | | | | |
| | 72 | | | | | | | | | | | | | | |
| | 105 | | | | | | | | | | | | | | |
| | 93 | 65'-67' | D | 30 | 31 | 30 | | | | | | | 13 | 24" | 15" |
| | 109 | | | 34 | | | | | | | | | | | |
| | 130 | | | | | | | | | | | | | | |
| | 143 | | | | | | | | | | | | | | |
| | 100 | | | | | | | | | | | | | | |
| 80 | | 70'-72' | D | 26 | 48 | 59 | " | 79' | Gray fine to medium SAND some silt, trace fine to medium gravel | 14 | 24" | 7" | | | |
| | | | | 72 | | | | | | | | | | | |
| | | 75'-77' | D | 51 | 63 | 59 | | | | | | | - | 24" | 0" |
| | | | | 47 | (140# - 300# wt) | | | | | | | | | | |
| | 77'6"-79'6" | D | 15 | 118 | 68 | Moist | | | Gray-br. F-C SAND & silt, some F-M gravel TILL | - | 24" | 0" | | | |
| | | | | | | V.dense | | | | | | | | | |

GROUND SURFACE TO _____
 Sample Type _____
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

USED _____ "CASING: THEN _____
 Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%
 140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. B-23

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Prov. Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Prop. Tank LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-24
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

| GROUND WATER OBSERVATIONS | | | | Rods-"AW" | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|------------------|-------|-------------|---------------|---------------|---------|----------|--------------------------------|------|
| At <u>6'-7"</u> | after <u>1/6</u> | Hours | Type | <u>S/S</u> | | | | START <u>7/26/71</u> | |
| At _____ | after _____ | Hours | Size I.D. | <u>2 1/2"</u> | <u>1 3/8"</u> | | | COMPLETE <u>7/28/71</u> | |
| | | | Hammer Wt. | <u>300#</u> | <u>140#</u> | | | TOTAL HRS. _____ | |
| | | | Hammer Fall | <u>24"</u> | <u>30"</u> | | | BORING FOREMAN <u>A. Gomes</u> | |
| | | | | | | | | INSPECTOR <u>D. Andrews</u> | |
| | | | | | | | | SOILS ENGR. <u>D. Andrews</u> | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Per | Ret. | | |
| 10 | 36 | 0'-2' | D | 12 | 9 | 9 | Dry medium dense | 7'0" | Brown fine sand, cinders, brick, FILL | 1 | 24" | 8" | | |
| | 31 | | | 6 | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 9 | 5'-7' | D | 6 | 6 | 7 | " | | | | | 2 | 24" | 10" |
| | 7 | | | 4 | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | |
| | 1 | | | | | | Wet soft | | | | | | | |
| 20 | 6 | 10'-12' | D | 1 | 1 | 1 | " | 18'0" | Gray ORGANIC SILT | 3 | 24" | 8" | | |
| | 1 | | | | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | |
| | 6 | 15'-17' | D | 2 | 1 | 1 | " | | | | | 4 | 24" | 9" |
| | 2 | | | 1 | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | |
| 30 | 13 | 20'-22' | D | 12 | 13 | 18 | Wet dense | 28'0" | Gray medium to coarse SAND & fine to medium gravel, little silt | 5 | 24" | 8" | | |
| | 20 | | | 13 | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | |
| | 17 | | | | | | Wet medium dense | | | | | | | |
| | 16 | 25'-27' | D | 10 | 10 | 11 | " | | | | | 6 | 24" | 7" |
| | 14 | | | 12 | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | |
| | 20 | | | | | | Wet very stiff | | | | | | | |
| 40 | 13 | 30'-32' | D | 8 | 12 | 14 | " | 38'0" | Gray-brown SILT | 7 | 24" | 10" | | |
| | 24 | | | 11 | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | |
| | 42 | | | | | | | | | | | | | |
| | 43 | | | | | | | | | | | | | |
| | 27 | 35'-37' | D | 8 | 17 | 21 | Wet hard | | | | | 8 | 24" | 10" |
| | 41 | | | 20 | | | | | | | | | | |
| | 47 | | | | | | | | | | | | | |
| | 60 | | | | | | | | | | | | | |
| | 63 | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 83'
 Rock Coring _____
 Samples 18
 HOLE NO. B-24

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-24

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.0'

TO same as 1 ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|------------------|-------------------|----------|-----------|---------------------------|------|
| At <u>6'7"</u> | after <u>1/6</u> Hours | Type _____ | <u>same as 1</u> | <u>1</u> | _____ | START _____ | a.m. |
| At _____ | after _____ Hours | Size I. D. _____ | _____ | _____ | _____ | COMPLETE <u>same as 1</u> | p.m. |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 50 | 31 | 40'-42' | D | 10 | 19 | 23 | Moist hard | Gray SILT | 9 | 24" | 9" | |
| | 46 | | | 24 | | | | | | | | |
| | 66 | | | | | | | | | | | |
| | 77 | | | | | | | | | | | |
| | 76 | | | | | | | | | | | |
| | 55 | 45'-47' | D | 14 | 16 | 18 | " | | 10 | 24" | 9" | |
| | 66 | | | 30 | | | | | | | | |
| | 104 | | | | | | | | | | | |
| | 138 | | | | | | | | | | | |
| | 158 | | | | | | | | | | | |
| 60 | 128 | 50'-52' | D | 9 | 11 | 10 | moist very stiff | | 11 | 24" | 10" | |
| | | | | 14 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | 55'-57' | D | 10 | 9 | 20 | Moist hard | | 12 | 24" | 9" | |
| | | | | 22 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 70 | | 60'-62' | D | 8 | 10 | 12 | " | | 13 | 24" | 10" | |
| | | | | 38 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | 65'-66'6" | D | 18 | 35 | 44 | " | | 14 | 18" | 12" | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 70'-72' | D | 20 | 37 | 50 | " | | 15 | 18" | 9" | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | 75'-77' | D | 20 | 27 | 22 | " | | 16 | 24" | 8" | |
| | | | | 26 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

78'0"

TILL- gray fine SAND, some silt, little fine gravel

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. B-24

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-25
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

TO Prov. Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Prop. Tank LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| | | | | |
|--|----------------------------|--|---|--|
| GROUND WATER OBSERVATIONS | | Rods - "AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> BIT _____ 30" | CORE BAR _____ START <u>7/28/71</u> COMPLETE <u>7/28/71</u> TOTAL HRS. _____ BORING FOREMAN <u>Gones</u> INSPECTOR _____ SOILS ENGR. _____ |
| At <u>7'3"</u> after <u>10</u> min. <u>BLESSOK</u> | At _____ after _____ Hours | | | |

LOCATION OF BORING:

| DEPTH | Casing Brows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|--------------------------------|-------------------------------|----------------------|----------------------------|------------|---------------|---------------------------------------|---|---|--------|-----|------|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Ret. | |
| 10 | 9 | 0'-2' | D | 12 | 6 | 4 | Dry loose | 2' | Gray fine to medium SAND, gravel & coal FILL | 1 | 24" | 10 | |
| | 12 | | | 4 | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | |
| 20 | | 5'-7' | D | 40 | 19 | 15 | Moist dense | 10' | Brown fine to medium SAND little silt & fine gravel FILL | 2 | 24" | 10 | |
| | | | | 21 | | | | | | | | | |
| | 1 | 10'-12' | D | 3 | 3 | 5 | Wet loose | 20' | Gray fine SAND & silt, some fine to medium gravel FILL | 3 | 24" | 7" | |
| | 5 | | | 3 | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | |
| | 3 | 15'-17' | D | 7 | 9 | 8 | " | | | 4 | 24" | 9" | |
| | 5 | | | 4 | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 30 | 11 | 20'-22' | D | 4 | 4 | 3 | Wet M. stiff | 23' | Gray ORGANIC SILT, little F-M sand & fine gravel | 5 | 24" | 7" | |
| | 20 | | | 4 | | | | | | | | | |
| | 27 | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | |
| | 14 | 25'-27' | D | 12 | 14 | 21 | Moist dense | 37'6" | Gray-brown fine to medium SAND & gravel, some silt | 6 | 24" | 12" | |
| | 26 | | | 19 | | | | | | | | | |
| | 35 | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | |
| 14 | 30'-32' | D | 40 | 24 | 14 | " | | Gray-brown fine to medium SAND, some silt & fine gravel | 7 | 24" | 9" | | |
| 40 | | | 20 | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | |
| 22 | 35'-37' | D | 20 | 21 | 28 | " | | lost sample | - | 24" | 0" | | |
| 34 | | | 21 | | | | | | | | | | |
| 52 | | | | | | | | | | | | | |
| 74 | 37'-33'6" | D | 33 | 40 | 40 | Moist hard | | Gray-brown SILT, little fine sand | 8 | 18" | 10" | | |
| 40 | 80 | | | | | | | | | | | | |

GROUND SURFACE TO 45' USED 2 1/2 "CASING: THEN sampled to 29'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 99'
 Rock Coring _____
 Samples 20

HOLE NO. B-25

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-25

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1

ADDRESS Same as #1

PROJECT NAME _____

LOCATION _____

REPORT SENT TO _____

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. 71-297

| | | |
|--|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>Same as #1</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR.</p> <p>Type <u>Same as #1</u></p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date Time</p> <p>START <u>Same as #1</u> a.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|----------------------------|---|--------|------|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| 50 | 32 | 40'-42' | D | 14 | 23 | 25 | Moist hard | Gray SILT, trace fine sand | 9 | 18" | - | |
| | 54 | | | 33 | | | | | | | | |
| | 78 | | | | | | | | | | | |
| | 89 | | | | | | | | | | | |
| | 73 | | | | | | | | | | | |
| 60 | | 45'-47' | D | 14 | 33 | 29 | " | Gray SILT | 10 | 24" | 14' | |
| | | | | 38 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 70 | | 50'-52' | D | 7 | 8 | 8 | Moist stiff | | 11 | 24" | 10' | |
| | | | | 7 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 55'-57' | D | 13 | 18 | 22 | Moist hard | | 12 | 24" | 9" | |
| | | | | 27 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 60'-62' | D | 13 | 14 | 20 | " | | 13 | 24" | 10' | |
| | | | | 23 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 65'-67' | D | 5 | 11 | 13 | Moist very stiff | | 14 | 24" | 9" | |
| | | | | 12 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 70'-72' | D | 12 | 14 | 13 | " | | 15 | 24" | 10' | |
| | | | | 16 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 75'-77' | D | 12 | 14 | 20 | Moist hard | | 16 | 24" | 10' | |
| | | | | 31 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | | |
|--|--|---|--|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>"CASING: THEN _____</p> <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50 + Very Dense 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> |
|--|--|---|--|

HOLE NO **B-25**

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3
 DATE _____
 HOLE NO. B-25
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO same as #1 ADDRESS same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>same as #1</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>same as #1</u> CORE BAR _____ Type _____ Size I D. _____ Hammer Wt. _____ Hammer Fall _____ | Date <u>Same as #1</u> Time _____ START _____ a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|------|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| 90 | | 80'-82' | D | 7 | 11 | 14 | Moist hard | 85' | Gray SILT, trace fine sand | 17 | 24" | 13" |
| | | | | 26 | | | | | | | | |
| | | 85'-87' | D | 152 | 83 | 70 | Moist very dense | | Gray fine to medium SAND, some silt & fine to medium gravel TILL | 18 | 24" | 9" |
| | | | | 60 | | | | | | | | |
| | | 90'-92' | D | 30 | 29 | 28 | " | | Gray fine to medium SAND, little silt, trace fine gravel TILL | 19 | 24" | 10" |
| 100 | | | | 29 | | | | | | | | |
| | | 95'-97' | D | 40 | 24 | 14 | Moist dense | 99' | Lost sample TILL | - | 24" | 0" |
| | | | | 20 | | | | | | | | |
| | 97'-99' | D | 32 | 31 | 27 | " | Bottom of boring 99' | | 20 | 24" | 10" | |
| | | | | 19 | | | | | | | | |

| | | | | |
|---|---|---|---|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | THEN _____ Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. B-25 |
|---|---|---|---|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-26
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.50

TO Prov. Gas Co. - Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| | | | | |
|--|---|--|-----------------------------|---|
| GROUND WATER OBSERVATIONS At <u>12'</u> after <u>16</u> Hours At _____ after _____ Hours | Rods - "AW" Type _____ Size I. D. <u>2 1/2"</u> Hemmer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>7/27/71</u> c.m. p.m. COMPLETE <u>7/29/71</u> TOTAL HRS. _____ BORING FOREMAN <u>H. Manco</u> INSPECTOR <u>D. Andrews</u> SOILS ENGR. <u>D. Andrews</u> |
|--|---|--|-----------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|------|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| 10 | 3 | 0'-2' | D | 6 | 14 | 18 | Dry dense | 5'0" | Brown fine SAND & coal, ash brick, FILL | 1 | 24" | 24 |
| | 6 | | | 15 | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 12 | | | | | | | | | | | |
| 20 | 6 | 5'-7' | D | 10 | 13 | 13 | " | 10' | Brown fine SAND, FILL | 2 | 24" | 20 |
| | 9 | | | 17 | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 11 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| 30 | 2 | 10'-12' | D | 2 | 3 | 4 | Moist loose | 19'0" | Gray-brown fine to medium SAND, some fine gravel, little silt, FILL | 3 | 24" | 20 |
| | 2 | | | 4 | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 7 | | | | | | wet medium dense | | | | | |
| 40 | 4 | 15'-17' | D | 6 | 5 | 8 | Moist medium stiff | 23'0" | gray fine SAND, some silt, FILL | 4 | 24" | 23 |
| | 4 | | | 10 | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| 30 | 4 | 20'-22' | D | 2 | 2 | 2 | Wet loose | 30'0" | Dark gray ORGANIC SILT, little fine sand | 5 | 24" | 24 |
| | 8 | | | 2 | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 40 | 25'-27' | D | 2 | 4 | 3 | | | | | | |
| 30 | 30 | | | 4 | | | Moist very stiff | 34'0" | Dark gray fine to medium SAND, some organic silt | 6 | 24" | 24 |
| | 25 | | | | | | | | | | | |
| | 49 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |
| | 17 | 30'-32' | D | 13 | 9 | 9 | | | | | | |
| 40 | 17 | | | 12 | | | Moist dense | | Gray-brown SILT, trace fine sand | 7 | 24" | 12 |
| | 20 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |
| | 41 | | | | | | | | | | | |
| | 30 | 35'-37' | D | 13 | 17 | 19 | | | | | | |
| 40 | 51 | | | 22 | | | | | | | | |
| | 57 | | | | | | | | | | | |
| | 52 | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |

GROUND SURFACE TO 90' USED 2 1/2" CASING: THEN S/S & o.e. rod to 96'3"

| | | | |
|--|---|--|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
|--|---|--|---|

SUMMARY:
 Earth Boring 56'3"
 Rock Coring _____
 Samples 20
HOLE NO. B-26

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-26

LINE & STA. _____

OFFSET _____

SURF. ELEV. 8.50

TO: same as 1 ADDRESS: same as 1
 PROJECT NAME: _____ LOCATION: _____
 REPORT SENT TO: _____ PROJ. NO. _____
 SAMPLES SENT TO: _____ OUR JOB NO. _____

| | | |
|--|--|---|
| GROUND WATER OBSERVATIONS At <u>same as 1</u> after _____ Hours At _____ after _____ Hours | CASING SAMPLER CORE BAR Type <u>same as 1</u> Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | Date _____ Time _____ START <u>same as 1</u> o.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|--|--|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|--------------------|------------------------------|--|---|---------------------------------|-----------------|------|-----|-----|--|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Res. | | | |
| 50 | 22 | 40'-42' | D | 23 | 16 | 19 | Wet dense | 44'0" | Brown fine to coarse SAND, & gravel, some silt | 9 | 24" | 18" | | | |
| | 32 | | | 25 | | | | | | | | | | | |
| | 62 | | | | | | | | | | | | | | |
| | 63 | | | | | | | | | | | | | | |
| | 59 | | | | | | | | | | | | | | |
| | 17 | 45'-47' | D | 9 | 11 | 14 | Moist hard | | | 54'0" | Gray-brown SILT | 10 | 24" | 24" | |
| | 17 | | | 19 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | |
| 31 | 50'-52' | D | 13 | 15 | 14 | " | 54'0" | @ 50' becomes gray | 11 | | | 24" | 24" | | |
| 31 | | | 15 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | | |
| 41 | 55'-57' | D | 12 | 19 | 22 | Moist dense | | | 59'6" | Gray SILT, some fine sand | 12 | 24" | 24" | | |
| 41 | | | 24 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | | |
| 33 | 60'-62' | D | 21 | 21 | 25 | Moist dense | 75'0" | Gray SILT, trace fine sand | | | 13 | 24" | 24" | | |
| 50 | | | 33 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | | |
| 44 | 65'-67' | D | 36 | 28 | 31 | " | | | 75'0" | Gray-brown SILT, some fine sand | 14 | 24" | 24" | | |
| 45 | | | 33 | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | |
| 39 | 70'-72' | D | 26 | 24 | 26 | " | 75'0" | Brown-gray fine SAND w/ layers of silt | | | 15 | 24" | 24" | | |
| 52 | | | 32 | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | |
| 31 | 75'-77' | D | 17 | 14 | 14 | Moist medium dense | | | 80' | | 16 | 24" | 24" | | |
| 46 | | | 12 | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | | | | |

| | | | |
|---|---|--|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | _____ Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ | | | HOLE NO. B-26 |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. B-26

LINE & STA. _____

OFFSET _____

SURF. ELEV. 8.50

TO _____ ADDRESS _____
 PROJECT NAME same as 1 LOCATION _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

PROJ. NO. _____
 OUR JOB NO. _____

Date _____ Time _____
 START same as 1 a.m.
 COMPLETE _____ p.m.
 TOTAL HRS. _____
 BORING FOREMAN _____
 INSPECTOR _____
 SOILS ENGR. _____

GROUND WATER OBSERVATIONS
 At same as 1 after _____ Hours
 Type _____
 Size I.D. _____
 Hammer Wt. _____
 Hammer Fall _____

CASING _____
 SAMPLER same as 1
 CORE BAR _____
 BIT _____

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| 90 | 46 | 80'-82' | D | 19 | 15 | 13 | Moist medium dense | 90' | Gray fine to coarse SAND & gravel, some silt | 17 | 24" | 24" | |
| | 65 | | | 11 | | | | | | | | | |
| | 67 | | | | | | | | | | | | |
| | 70 | | | | | | | | | | | | |
| | 77 | | | | | | | | | | | | |
| 90 | 35 | 85'-87' | D | 8 | 17 | 38 | Wet very dense | 90' | Gray medium to coarse SAND & fine gravel | 18 | 24" | 24" | |
| | 65 | | | 23 | | | | | | | | | |
| | 71 | | | | | | | | | | | | |
| | 57 | | | | | | | | | | | | |
| 95 | | 90'-92' | D | 3 | 5 | 8 | Moist medium dense | 95'0" | Gray medium to fine running SAND, trace silt | 19 | 24" | 12 | |
| | | | | 15 | | | | | | | | | |
| 95 | | 95'-96'3" | D** | 26 | 87 | 100/3" | moist | 96'3" | TILL-gray F-M SAND, some fine to medium gravel, little silt Bottom of boring 96'3" | 20 | 15" | -- | |
| | | | | | | | | | | | | | |

D** denotes used
 300% wt on open end
 AW rod sampler

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. **B-26**

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE _____
 HOLE NO. B-27
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.50'

TO Providence Gas Co. -Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION PROVIDENCE, RI
 REPORT SENT TO above PROJ. NO. _____
 COPIES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | | Rods-AW | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|------------------------|--|--|-------------------------|--------|---------------|----------|--------------------------------|------|
| <u>9'8"</u> | after <u>1/4</u> Hours | | | Type _____ | | <u>S/S</u> | | START <u>7/26/71</u> | a.m. |
| <u>cas. @40'</u> | | | | Size I.D. <u>2-1/2"</u> | | <u>1-3/8"</u> | | COMPLETE <u>7/27/71</u> | p.m. |
| <u>10'</u> | after <u>1/2</u> Hours | | | Hammer Wt. <u>300#</u> | | <u>140#</u> | | TOTAL HRS. _____ | |
| <u>casing out</u> | | | | Hammer Fall <u>24"</u> | | <u>30"</u> | BIT | BORING FOREMAN <u>W. Manco</u> | |
| | | | | | | | | INSPECTOR _____ | |
| | | | | | | | | SOILS ENGR. <u>D. Andrews</u> | |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|---|------|-----|-----|
| | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | | |
| 3 | 0'-2' | D | 14 | 12 | 12 | dry | 13'-0" | Brown SILT and coal-ash - FILL, some fine sand | 1 | 24" | 21" | | |
| 18 | | | 19 | | | medium | | | | | | | |
| 25 | | | | | | dense | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 12 | 5'-7' | D | 29 | 28 | 18 | dry | | | | -lost sample @ 5' -pushing cobble- lost sample @ 7' | -- | 24" | 0" |
| 12 | | | 14 | | | dense | | | | | | | |
| 12 | 7'-9' | D | 16 | 8 | 8 | | | | -- | | 24" | 0" | |
| 11 | | | 5 | | | | | | | | | | |
| 14 | | | | | | moist | | | | | | | |
| 7 | 10'-12' | D | 7 | 8 | 5 | medium | | | | 20'-0" | 2 | 24" | 20" |
| 16 | | | 11 | | | dense | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 5 | 15'-17' | D | 2 | 7 | 9 | " | | Dark gray ORGANIC SILT, Some fine to coarse sand | 3 | | 24" | 21" | |
| 5 | | | 6 | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | 20'-22' | D | 2 | 4 | 4 | " | | Brown fine to medium SAND, Little organic silt | 4 | 24" | 21" | | |
| 9 | | | 7 | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | |
| 15 | 25'-27' | D | 6 | 8 | 8 | " | | | 30'-0" | 5 | 24" | 20" | |
| 19 | | | 10 | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 24 | 30'-32' | D | 6 | 10 | 13 | " | | Brown fine to coarse SAND, Some silt, little fine to coarse gravel | 6 | 24" | 23" | | |
| 28 | | | 15 | | | | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 23 | | | | | | moist | | | | | | | |
| 20 | 35'-37' | D | 10 | 12 | 18 | dense | | 7 | 24" | 20" | | | |
| 22 | | | 14 | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |

GROUND SURFACE TO 78' USED 2 1/2 "CASING: THEN S/S to 80'

Sample Type
 D=Dry C=Cored W=Washed
 JP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 JT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 80'
 Rock Coring --
 Samples 15
 HOLE NO. B-27

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. B-27
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO same as 1 ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 PLES SENT TO _____ OUR JOB NO. _____

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | Date | Time |
|----------------------------|-------------------|--------|---------|-----------|----------------------|------------|
| At _____ after _____ Hours | Type _____ | _____ | _____ | _____ | START _____ | _____ a.m. |
| At _____ after _____ Hours | Size I.D. _____ | _____ | _____ | _____ | COMPLETE _____ | _____ p.m. |
| | Hammer Wt. _____ | _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | Hammer Fall _____ | _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | _____ | _____ | _____ | INSPECTOR _____ | |
| | | _____ | _____ | _____ | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|---------------------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| 40 | 28 | 40'-42' | D | 11 | 15 | 19 | moist dense | 46'-0" | Brown fine to coarse SAND, Some silt, little fine to coarse gravel | 8 | 24" | 21" | |
| | 29 | | | 19 | | | | | | | | | |
| | 37 | | | | | | | | | | | | |
| | 44 | | | | | | | | | | | | |
| | 43 | | | | | | moist very dense | 46'-0" | Brown SILT and fine sand, Some fine gravel | 9 | 24" | 19" | |
| | 35 | 45'-47' | D | 11 | 14 | 31 | | | | | | | |
| | 58 | | | 62 | | | | | | | | | |
| | 60 | | | | | | | | | | | | |
| 50 | 67 | | | | | | " | 55'-0" | Gray SILT, trace fine sand | 10 | 24" | 20" | |
| | 37 | 50'-52' | D | 23 | 23 | 30 | | | | | | | |
| | 41 | | | 32 | | | | | | | | | |
| | 62 | | | | | | | | | | | | |
| | 87 | | | | | | | 57'-0" | Gray fine SAND, little silt (Sand running up casing 9" @ 60' sample) | 11 | 24" | 21" | |
| | 66 | 55'-57' | D | 17 | 21 | 23 | moist dense | | | | | | |
| | 71 | | | 20 | | | | | | | | | |
| | 92 | | | | | | | | | | | | |
| 60 | 88 | | | | | | moist medium dense | 72'-0" | Gray medium to fine SAND (Sand running up casing 3'7" at 65' sample) | 12 | 24" | 23" | |
| | 44 | 60'-62' | D | 3 | 4 | 8 | | | | | | | |
| | 52 | | | 13 | | | | | | | | | |
| | 58 | | | | | | | | | | | | |
| | 72 | | | | | | | 80'-0" | Dark gray fine to coarse SAND, some silt and fine gravel, cemented TILL | 13 | 24" | 22" | |
| | 100 | | | | | | | | | | | | |
| | 69 | 65'-67' | D | 7 | 18 | 18 | moist dense | | | | | | |
| | 88 | | | 25 | | | | | | | | | |
| 70 | 125 | | | | | | | 80'-0" | Bottom of Boring 80'-0" | 14 | 24" | 23" | |
| | 161 | | | | | | | | | | | | |
| | 185 | | | | | | | | | | | | |
| | 48 | 70'-72' | D | 8 | 16 | 19 | " | | | | | | |
| | 153 | | | 28 | | | | 80'-0" | Bottom of Boring 80'-0" | 15 | 24" | -- | |
| | 465 | | | | | | | | | | | | |
| | 278 | 74'-76' | D** | 48 | 67 | 31 | moist very dense | | | | | | |
| | | | | 44 | | | | | | | | | |
| | | | | D** denotes used 300# wt. on open end | | | | | | | | | |
| | | | | A Rod sampler | | | | | | | | | |
| B | | 78-80' | D | 35 | 37 | 48/66 | | 80'-0" | Bottom of Boring 80'-0" | -- | 24" | 0" | |

GROUND SURFACE TO 78' USED 2 1/2" CASING: THEN lost sample bumping back

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____
HOLE NO. B-27

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

DATE _____

HOLE NO. B-28

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.00

TO Providence Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|------------------------|--|-------------------------|---------------|----------|--------------------------------|------|
| At <u>9'6"</u> | after <u>1/2</u> Hours | | <u>Rods-"AW"</u> | <u>S/S</u> | | START <u>7/21/71</u> | |
| <u>casing @ 40'</u> | | | Type <u>BX</u> | <u>1 3/8"</u> | | COMPLETE <u>7/23/71</u> | |
| At <u>9'</u> | after <u>3/4</u> Hours | | Size I.D. <u>2 1/2"</u> | <u>140#</u> | | TOTAL HRS. _____ | |
| <u>casing out</u> | | | Hammer Wt. <u>300#</u> | <u>30"</u> | BIT | BORING FOREMAN <u>W. Manco</u> | |
| | | | Hammer Fall _____ | | | INSPECTOR <u>D. Andrews</u> | |
| | | | | | | SOILS ENGR. <u>D. Andrews</u> | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------------|------------------------------|---------------------|---|--------------------------------|---|---|-----|-----|-----|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec | | | |
| 10 | 3 | 0'-2' | D | 1 | 3 | 16 | Dry dense | 15'0" | Brown fine to medium SAND, coal, ash, FILL | 1 | 24" | 21" | | | |
| | 8 | | | 14 | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | |
| | 18 | | | | | | Dry medium dense | | | | Brown fine SAND, little silt and fine gravel, FILL | 2 | 24" | 20" | |
| | 14 | 5'-7' | D | 12 | 13 | 13 | | | | | | | | | |
| | 22 | | | 9 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | |
| 5 | 10'-11'6" | D | 5 | 8 | 10 | Moist dense | | 15'0" | Brown fine to medium SAND, little fine gravel, fuel odor noted, FILL | 3 | 24" | 18" | | | |
| 11 | | | 30 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | |
| 20 | 8 | 15'-17' | D | 6 | 4 | 4 | Moist stiff | 21'0" | Dark gray ORGANIC SILT (strong odor of fuel) | 4 | 24" | 13" | | | |
| | 8 | | | 4 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | |
| | 12 | | | | | | Moist medium dense | | | | | | | | |
| | 18 | 20'-22' | D | 3 | 3 | 7 | | | | | 25'0" | Dark gray fine to medium SAND, some organic silt | 5 | 24" | 23" |
| | 23 | | | 7 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | |
| 21 | 25'-27' | D | 12 | 13 | 10 | | | | 25'0" | Gray-brown fine to coarse SAND | 6 | 24" | 20" | | |
| 23 | | | 13 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| 30 | 27'-29' | D | 13 | 16 | 14 | " | | | | | | | | | |
| 36 | | | 17 | | | | | | | | | | | | |
| 30 | 30'-32' | D | 13 | 14 | 8 | " | | | | | 25'0" | Gray-brown fine to coarse SAND, some silt & coarse to fine gravel | 7 | 24" | 18" |
| 43 | | | 17 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | | |
| 48 | 35'-37' | D | 10 | 13 | 13 | " | | | | 25'0" | Gray-brown fine to coarse SAND, some silt & coarse to fine gravel | 8 | 24" | 22" | |
| 49 | | | 10 | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |
| 40 | 57 | | | | | | | | | | | | | | |

GROUND SURFACE TO 85' USED 2 1/2" CASING: THEN S/S to 87'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 87'
 Rock Coring _____
 Samples 17

HOLE NO. B-28

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-28

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.00

TO Same as #1
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS Same as #1
 LOCATION _____
 PROJ. NO. _____
 OUR JOB NO. _____

Date _____ Time _____
 START Same as #1 o.m.
 COMPLETE _____ p.m.
 TOTAL HRS. _____
 BORING FOREMAN _____
 INSPECTOR _____
 SOILS ENGR. _____

GROUND WATER OBSERVATIONS
 At Same as #1 after _____ Hours
 Type Same as #1
 At _____ after _____ Hours
 Size I.D. _____
 Hammer Wt. _____
 Hammer Fall _____

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|--|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 50 | 33 | 40'-42' | D | 17 | 19 | 22 | Moist dense | Brown fine to coarse SAND, some silt & fine to medium gravel | 9 | 24' | 18 | |
| | 41 | | | 16 | | | | | | | | |
| | 47 | | | | | | | | | | | |
| | 52 | | | | | | | | | | | |
| | 58 | | | | | | | | | | | |
| | 34 | 45'-47' | D | 29 | 40 | 22 | " | | | 10 | 24' | 22 |
| | 55 | | | 21 | | | | | | | | |
| | 71 | | | | | | | | | | | |
| | 85 | | | | | | | | | | | |
| | 130 | | | | | | Moist very dense | | | | | |
| 60 | 71 | 50'-52' | D | 31 | 38 | 35 | | (Note: 64' to 66' running sand) | 11 | 24' | 23 | |
| | 67 | | | 36 | | | | | | | | |
| | 93 | | | | | | | | | | | |
| | 114 | | | | | | | | | | | |
| | 126 | | | | | | | | | | | |
| | 72 | 55'-57' | D | 44 | 46 | 32 | " | | | 12 | 24' | 22 |
| | 85 | | | 27 | | | | | | | | |
| | 110 | | | | | | | | | | | |
| | 131 | | | | | | | | | | | |
| | 147 | | | | | | | | | | | |
| 70 | 218 | 60'-62' | D | 30 | 33 | 46 | " | Gray-brown medium to coarse SAND @70' sand running up 11" | 13 | 24' | 19 | |
| | 141 | | | 49 | | | | | | | | |
| | 181 | | | | | | | | | | | |
| | 180 | | | | | | | | | | | |
| | 129 | | | | | | | | | | | |
| | 26 | 65'-67' | D | 10 | 18 | 18 | Moist dense | | | 14 | 24' | 24 |
| | 40 | | | 24 | | | | | | | | |
| | 52 | | | | | | | | | | | |
| | 69 | | | | | | | | | | | |
| | 76 | | | | | | Moist very dense | | | | | |
| 80 | 42 | 70'-72' | D | 19 | 28 | 29 | | Gray fine SAND, trace silt and fine gravel | 15 | 24' | 20 | |
| | 50 | | | 29 | | | | | | | | |
| | 61 | | | | | | | | | | | |
| | 58 | | | | | | | | | | | |
| | 84 | | | | | | | | | | | |
| | 72 | 75'-77' | D | 67 | 67 | 110 | " | | | 16 | 24' | 20 |
| 107 | | | 120 | | | | | | | | | |
| 107 | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | |
| 125 | | | | | | | 79'0" | | | | | |
| | | | | | | | | (see next page) | | | | |

GROUND SURFACE TO _____
 Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

USED _____
 Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

"CASING: THEN _____
 140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____
HOLE NO. B-28

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3
 DATE _____
 HOLE NO. B-28
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|--|---|--|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>Same as #1</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR</p> <p style="text-align: center;"><u>same as #1</u></p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____ BIT _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date Time</p> <p>START <u>same as #1</u> _____ a.m. _____ p.m. COMPLETE _____ TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____</p> |
|--|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc | SAMPLE | | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|--|--------|------|------|----|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Per. | Rec. | | |
| 90 | 66 | 80'-82' | D | 39 | 29 | 29 | Moist very dense | | Gray fine SAND, some silt fine gravel, & shale cemented TILL | 16 | 24" | 20 | | |
| | 112 | | | 38 | | | | | | | | | | |
| | 153 | | | | | | | | | | | | | |
| | 160 | | | | | | | | | | | | | |
| | 147 | | | | | | | | | | | | | |
| | | 85'-87' | D | 21 | 25 | 28 | " | 87'0" | | | 17 | 24" | 20 | |
| | | | | 29 | | | | | Bottom of boring 87'0" | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| | | | | |
|--|--|--|--|---|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____ "CASING: THEN _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense</p> | <p>Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> |
|--|--|--|--|---|

HOLE NO. **B-28**

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

DATE _____

HOLE NO. B-29

LINE & STA. _____

OFFSET _____

SURF. ELEV. 11.00

TO Providence Gas Co.-Maloy & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| GROUND-WATER OBSERVATIONS | | | | RODS - "AW" | CASING | SAMPLER | CORE BAR | Date | |
|---------------------------|--------------|-------|------------|-------------------|-------------|---------------|-----------|---------------------------------|------|
| At | | after | Hours | | | | | START | Time |
| At | <u>13'4"</u> | | <u>1/2</u> | Type _____ | | <u>S/S</u> | | <u>7/16/71</u> | a.m. |
| At | _____ | | _____ | Size I.D. _____ | <u>DNF</u> | <u>1 3/8"</u> | | <u>7/15/71</u> | p.m. |
| | | | | Hammer Wt. _____ | <u>300#</u> | <u>1 1/2"</u> | BIT _____ | TOTAL HRS. _____ | |
| | | | | Hammer Fall _____ | <u>24"</u> | <u>32"</u> | | BORING FOREMAN <u>D. Harold</u> | |
| | | | | | | | | INSPECTOR _____ | |
| | | | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|------------------|------------------------------|---------------------|---|--|------|------|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. | |
| 10 | 2 | 0'-2' | D | 2 | 7 | 27 | Dry | 13'7" | Gray-brown fine SAND, some fine to medium gravel FILL | 1 | 24' | 24' | |
| | 13 | | | 10 | | | very dense | | | | | | |
| | 12 | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| | 12 | 5'-7' | D | 17 | 11 | 5 | Dry | | 15'1" | Gray-brown fine SAND, some fine to medium gravel - black coal & ash FILL | 2 | 20' | 24' |
| | 9 | | | 3 | | | loose | | | | | | |
| | 17 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | |
| 5 | 12'-13' | D | 13 | | | Wet medium dense | | | | 3 | 12' | 11' | |
| | | | | | | | | | | | | | |
| 20 | 1 | | | | | | Wet | 29' | | Cored CONCRETE - FILL | | | |
| | 6 | 15'-16' | D | 10 | 13 | 10 | very stiff | | | | 4 | 24' | 24' |
| | 14 | | | 12 | | | | | | | | | |
| | 13 | | | | | | | | | | | | |
| | 12 | 20'-22' | D | 15 | 13 | 9 | Wet medium dense | | | | 5 | 24' | 24' |
| | 19 | | | 11 | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | |
| | 8 | 25'-27' | D | 7 | 5 | 9 | " | | | | 6 | 24' | 24' |
| 15 | | | 10 | | | | | | | | | | |
| 30 | 13 | 30'-32' | D | 11 | 22 | 22 | Wet dense | 34'6" | Gray fine to coarse SAND, little fine to medium gravel little silt | 7 | 24' | 24' | |
| | 22 | | | 21 | | | | | | | | | |
| | 23 | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | |
| | 17 | 35'-37' | D | 11 | 13 | 15 | " | | | | 8 | 24' | 24' |
| | 21 | | | 11 | | | | | | | | | |
| | 33 | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | |

GROUND SURFACE TO 04' USED DNF "CASING: THEN S/S to 07'

| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
|---------------------------------|------------------|---|-------------------------|
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Earth Boring <u>07'</u> |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | Samples <u>10</u> |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | HOLE NO. <u>B-29</u> |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-29

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO From ca #1
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS Same as #1
 LOCATION _____
 PROJ. NO. _____
 OUR JOB NO. _____

| | | | | | | |
|--|-------------------|--------|-------------------|----------|-------------------|------------------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | Date | Time |
| At <u>Same as #1</u> after _____ Hours | Type _____ | | <u>Same as #1</u> | | <u>Same as #1</u> | |
| At _____ after _____ Hours | Size I.D. _____ | | | | | |
| | Hammer Wt. _____ | | | BIT | | |
| | Hammer Fall _____ | | | | | |
| | | | | | START | <u>Same as #1</u> g.m. |
| | | | | | COMPLETE | g.m. |
| | | | | | TOTAL HRS. | g.m. |
| | | | | | BORING FOREMAN | |
| | | | | | INSPECTOR | |
| | | | | | SOILS ENGR. | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | | | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|--|---|--------|-----|------|--------------------------------------|--|-----|-----|-----|--------------------------------------|----|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | | | | | | | | | |
| 50 | 15 | 43'-42' | D | 15 | 25 | 37 | Moist | 42' | Gray medium SAND, trace fine gravel & silt (running) | 9 | 24' | 24' | | | | | | | | | |
| | 26 | | | 35 | | | very dense | | | | | | | | | | | | | | |
| | 50 | | | | | | | | | | | | | | | | | | | | |
| | 70 | | | | | | | | | | | | | | | | | | | | |
| | 103 | | | | | | | | | | | | | | | | | | | | |
| | 29 | 45'-47' | D | 22 | 37 | 33 | " | | | | | | 53'5" | Gray fine to coarse SAND & gravel, little silt | 10 | 24' | 24' | | | | |
| | 47 | | | 37 | | | | | | | | | | | | | | | | | |
| | 50 | | | | | | | | | | | | | | | | | | | | |
| | 60 | | | | | | | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | | | | | | | |
| 27 | 50'-52' | D | 17 | 24 | 30 | " | 59' | Gray fine to coarse running SAND, trace silt | 11 | 24' | 24' | | | | | | | | | | |
| 45 | | | 32 | | | | | | | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | | | | | | | |
| 30 | 55'-57' | D | 7 | 19 | 34 | " | | | | | | 63' | Gray medium running SAND, trace silt | 12 | 24' | 24' | | | | | |
| 42 | | | 10 | | | | | | | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | | | | | | | | |
| 69 | | | | | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | | | | | |
| 34 | 60'-62' | D | 9 | 24 | 34 | " | 69' | Gray medium running SAND, trace silt | 13 | 24' | 24' | | | | | | | | | | |
| 65 | | | 33 | | | | | | | | | | | | | | | | | | |
| 66 | | | | | | | | | | | | | | | | | | | | | |
| 75 | 65'-67' | D | 6 | 13 | 27 | " | | | | | | | | | | | 73' | Gray medium running SAND, trace silt | 14 | 24' | 24' |
| 69 | | | 35 | | | | | | | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | | | | | | | | | | |
| 77 | | | | | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | | | | | |
| 100 | 70'-72' | D | 2 | 20 | 49 | " | | | | | | 79' | Gray medium running SAND, trace silt | 15 | 24' | 24' | | | | | |
| 84 | | | 43 | | | | | | | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | | | | | | | | | | |
| 87 | | | | | | | | | | | | | | | | | | | | | |
| 56 | 73'-77' | D | 3 | 15 | 33 | " | 85' | Gray medium running SAND, trace silt | 16 | 24' | 24' | | | | | | | | | | |
| 71 | | | 37 | | | | | | | | | | | | | | | | | | |
| 89 | | | | | | | | | | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | | | | | | | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | | Earth Boring _____ Rock Coring _____ Samples _____ |
| | | | HOLE NO. <u>B-29</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. B-29

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO same as #1
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS same as #1
 LOCATION _____
 PROJ. NO. _____
 OUR JOB NO. _____

GROUND WATER OBSERVATIONS
 At same as #1 after _____ Hours
 At _____ after _____ Hours

CASING SAMPLER CORE BAR
 Type _____
 Size I.D. _____
 Hammer Wt. _____
 Hammer Fall _____

Date _____ Time _____
 START same as #1 a.m.
 COMPLETE _____ p.m.
 TOTAL HRS. _____
 BORING FOREMAN _____
 INSPECTOR _____
 SOILS ENGR. _____

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 90 | 02 | 11'-12' | D | 6 | 21 | 34 | Moist very dense | Cray fine to medium SAND Note: sand running up casing 10' at 90' | 17 | 24" | 24 | |
| | 03 | | | | | | | | | | | |
| | 04 | | | | | | | | | | | |
| | 05 | | | | | | | | | | | |
| | 06 | | | | | | | | | | | |
| | 07 | | | | | | | | | | | |
| | 08 | | | | | | | | | | | |
| | 09 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 11 | | | | | | | | | | | |
| 100 | 12 | 15'-17' | D | 11 | 15 | 27 | " | Bottom of boring 97' | 18 | 24" | 24 | |
| | 13 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 16 | | | | | | | | | | | |
| | 17 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 19 | | | | | | | | | | | |
| | 20 | | | | | | | | | | | |
| | 21 | | | | | | | | | | | |

GROUND SURFACE TO _____
 USED _____
 "CASING: THEN _____
 Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

| | | |
|---|---|---|
| Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
|---|---|---|

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____
HOLE NO. B-29

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Providence Gas Co., -Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

SHEET 1 OF 2
 DATE _____
 HOLE NO. B-30
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 11.50

| | | | |
|--|---|--|--|
| GROUND WATER OBSERVATIONS At <u>11'10"</u> after <u>20</u> min. At _____ after _____ Hours | Rods - "AH" Type _____ Size I. D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> BIT _____ | Date _____ Time _____ START <u>7/16/71</u> COMPLETE <u>7/20/71</u> TOTAL HRS. _____ BORING FOREMAN <u>C. Lenling</u> INSPECTOR _____ SOILS ENGR. _____ |
|--|---|--|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|------------------|------------------------------|---|---|------------------------------|--|------|-----|-----|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Per. | Rec. | | | |
| | | | | | | | | | | | | | | | |
| 10 | 3 | 0'-2' | D | 2 | 7 | 12 | Moist medium dense | 5' | 6" Brown fine SAND to black fine SAND, little silt, trace coarse gravel FILL | 1 | 24" | 15' | | | |
| | 10 | | | 15 | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | |
| | 17 | 5'-7' | D | 16 | 15 | 14 | " | | | 10' | Gray-brown fine to coarse SAND, trace silt & coarse to fine gravel, trace cement | 2 | 24" | 12' | |
| | 25 | | | 16 | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | |
| 11 | 10'-12' | D | 9 | 13 | 10 | wet medium dense | 15' | Gray-brown fine to coarse SAND, little silt, little fine to medium gravel | 3 | | | 24" | 14' | | |
| 8 | | | 12 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 15 | 15'-17' | D | 18 | 24 | 22 | Wet hard | | | 20' | Brown SILT, little fine sand | 4 | 24" | 12' | | |
| 24 | | | 24 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 19 | 20'-22' | D | 12 | 18 | 23 | Wet very dense | 30' | Brown SILT (varved) & fine sand layers | | | 5 | 24" | 12' | | |
| 25 | | | 26 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | | |
| 23 | 25'-27' | D | 20 | 26 | 31 | " | | | 40' | " | 6 | 24" | 13' | | |
| 34 | | | 37 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 32 | 30'-32' | D | 10 | 21 | 20 | " | 40' | " | | | 7 | 24" | 8' | | |
| 47 | | | 32 | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | | | | |
| 96 | | | | | | | | | | | | | | | |
| 38 | 35'-37' | D | 12 | 32 | 36 | " | | | 40' | " | 8 | 24" | 12' | | |
| 63 | | | 39 | | | | | | | | | | | | |
| 94 | | | | | | | | | | | | | | | |
| 127 | | | | | | | | | | | | | | | |
| 198 | | | | | | | | | | | | | | | |

GROUND SURFACE TO 50' USED 2 1/2" CASING: THEN S/S to 59'

| | | | | |
|--|---|--|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V. Stiff | SUMMARY: Earth Boring <u>59'</u> Rock Coring _____ Samples <u>13</u> HOLE NO. <u>B-30</u> |
|--|---|--|---|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-31

LINE & STA. _____

OFFSET _____

SURE. ELEV. 11.5'

TO _____ ADDRESS _____
 PROJECT NAME 8000 03-01 LOCATION 8000 03-01
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>8000 03-01</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>Same as #1</u> CORE BAR _____ Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | Date _____ Time _____ START <u>8000 03-01</u> _____ a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------------|------------------------------|---|---|---|--|------|-----|----|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. | | | |
| 50 | 19 | 40'-41'5" | D | 9 | 25 | 33 | Wet dense | 40'0" | Brown fine to medium SAND, trace of silt | 0 | 24' | 1 | | | |
| | 21 | | | 16 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | |
| | 29 | 45'-47' | D | 5 | 23 | 21 | " | | | 45'0" | Brown fine to coarse SAND, some silt, little fine gravel | 9 | 25' | 11 | |
| | 31 | | | 1 | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | | |
| 45 | 50'-52' | D | 1 | 34 | 35 | Wet very dense | 50'0" | Brown fine to medium SAND some silt, & fine to medium gravel, cemented | 10 | | | 26' | 12 | | |
| 47 | | | 3 | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | |
| 57 | 53'-57' | D | 3 | 28 | 21 | Wet dense | | | 55'0" | Brown fine to medium SAND, coarse fine to medium gravel | 11 | 27' | 13 | | |
| 59 | | | 2 | | | | | | | | | | | | |
| 61 | | | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | | |
| 69 | | | | | | | | | | | | | | | |
| 71 | | | | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | |
| 70 | 67 | 60'-63' | D | 7 | 32 | 42 | Wet very dense | 60'0" | Brown fine to medium SAND, coarse fine to medium gravel | 12 | 28' | 14 | | | |
| | 69 | | | 3 | | | | | | | | | | | |
| | 71 | | | | | | | | | | | | | | |
| | 73 | | | | | | | | | | | | | | |
| | 75 | | | | | | | | | | | | | | |
| | 77 | | | | | | | | | | | | | | |
| | 79 | | | | | | | | | | | | | | |
| | 81 | 65'-67' | D | 3 | 34 | 44 | " | | | 65'0" | Brown fine to coarse running SAND | 13 | 29' | 15 | |
| | 83 | | | 3 | | | | | | | | | | | |
| | 85 | | | | | | | | | | | | | | |
| 87 | | | | | | | | | | | | | | | |
| 89 | | | | | | | | | | | | | | | |
| 91 | | | | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | | | | |
| 97 | | | | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | | | | |
| 80 | 81 | 70'-72' | D | 1 | 29 | 27 | " | 70'0" | Gray fine to coarse running SAND | 14 | 30' | 16 | | | |
| | 83 | | | 2 | | | | | | | | | | | |
| | 85 | | | | | | | | | | | | | | |
| | 87 | | | | | | | | | | | | | | |
| | 89 | | | | | | | | | | | | | | |
| 91 | 75'-77' | D | 2 | 38 | 55 | " | 75'0" | Gray fine to coarse SAND, silt, fine gravel, and decomposed shale, FILL | 15 | 31' | 17 | | | | |
| 93 | | | 2 | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | | | | |
| 97 | | | | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | | | | |

| | | | |
|---|---|--|---|
| GROUND SURFACE TO _____ Sample Type _____ D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ "CASING: THEN _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ | | | |
| HOLE NO. <u>B-31</u> | | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Providence Gas Co-Haley & Aldrich

ADDRESS Cambridge, Mass.

PROJECT NAME Tank Site

LOCATION PROVIDENCE, RI

REPORT SENT TO above

PROJ. NO. 71-297

COPIES SENT TO "

OUR JOB NO.

SHEET 1 OF 1

DATE

HOLE NO. B-32

LINE & STA.

OFFSET

SURF. ELEV. 9.5'

| GROUND WATER OBSERVATIONS | | Rods-AW | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------|-------------|--------|---------|-----------|--------------------------|------|
| 8' | after 1/4 Hours | Type | BX | S/S | | START 7/14/71 | a.m. |
| | | Size I.D. | 2 1/2" | 1-3/8" | | COMPLETE 7/15/71 | p.m. |
| | | Hammer Wt. | 300# | 140# | BIT | TOTAL HRS. | |
| | | Hammer Fall | 24" | 30" | | BORING FOREMAN D. Hunold | |
| | | | | | | INSPECTOR D. Andrews | |
| | | | | | | SOILS ENGR. D. Andrews | |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc. | SAMPLE | | |
|--------------------------------|-------------------------------|----------------------|----------------------------|-------|-------------|---------------------------------------|--|---|--------|-----|------|
| | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | | | 3 | 0'-2' | D | | | | 19 | 25 | 23 |
| 20 | | | 16 | | | | | | | | |
| 21 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 21 | 5'-7' | D | 22 | 21 | 24 | " | Gray fine to coarse SAND, Some fine to medium gravel, Little silt | 2 | 18" | 18" | |
| 28 | | | 22 | | | | | | | | |
| 35 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 32 | | | | | | moist dense | | | | | |
| 12 | 10'-12' | D | 25 | 23 | 18 | | | | 3 | 18" | 18" |
| 24 | | | 30 | | | | | | | | |
| 38 | | | | | | | | | | | |
| 39 | | | | | | | 14'-0" | | | | |
| 46 | | | | | | moist very dense | Gray fine to coarse SAND, Some fine to medium gravel, Little silt | 4 | 18" | 18" | |
| 14 | 15'-16'-6" | D | 49 | 40 | 39 | | | | | | |
| 49 | | | | | | | | | | | |
| 64 | | | | | | | | | | | |
| 69 | | | | | | | | | | | |
| 177 | | | | | | | | 19'-0" | | | |
| | 20'-22' | D- | 94 | 50 | 44 | " | Gray fine to medium SAND, Some silt and fine gravel, FILL @22'4" Cored Boulders | 5 | 18" | 18" | |
| | | | 90 | | | | | | | | |
| | | | | | | | | | | | |
| | 25'-27' | D- | 56 | 24 | 38 | " | | Bottom of Boring 27'-0" | 6 | 18" | 18" |
| | | | 58 | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

D- denotes used
440# wt on Spoon
Sampler.

GROUND SURFACE TO 25' USED BXP "CASING: THEN S/S to 27'

Sample Type
D=Dry C=Cored W=Washed
UP=Undisturbed Piston
TP=Test Pit A=Auger V=Vane Test
UT=Undisturbed Thinwall

Proportions Used
trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
Cohesionless Density Cohesive Consistency
0-10 Loose 0-4 Soft 30+ Hard
10-30 Med. Dense 4-8 M/Stiff
30-50 Dense 8-15 Stiff
50+ Very Dense 15-30 V-Stiff

SUMMARY:
Earth Boring 27'
Rock Coring
Samples 6

HOLE NO. B-32

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE _____
 HOLE NO. B-33
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 10.5'

TO Prot. Gas Co. - Malay & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO _____ PROJ NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-297

| | | | | | |
|-------------------------------------|---------------------------|---------------|----------|---------------------------------|-------|
| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR | Date | Time |
| At <u>9'</u> after <u>1/2</u> Hours | <u>Redg. "AW"</u> Type | <u>S/S</u> | _____ | START <u>7/15/71</u> | _____ |
| At _____ after _____ Hours | Size I.D. <u>2 1/8"</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>7/15/71</u> | _____ |
| | Hammer Wt. <u>300#</u> | <u>1 1/2"</u> | BIT | TOTAL HRS. _____ | |
| | Hammer Fall <u>24"</u> | <u>39"</u> | | BORING FOREMAN <u>D. V. ...</u> | |
| | | | | INSPECTOR _____ | |
| | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------------|------------------------------|--|---|------------------------------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 10 | 1 | 0'-0' | S | 3 | 12 | 27 | Dry dense | 4'0" | Gray-brown fine SAND, some fine gravel, cinders, TILL | 1 | 24 | 23 |
| | 35 | | | | | | | | | | | |
| | 21 | 5'-7' | D | 30 | 34 | 35 | Moist very dense | | 9'3" | Brown fine SAND, little silt | 2 | 24 |
| | 22 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | |
| | 24 | | | | | | | | | | | |
| | 25 | 10'-12' | D | 40 | 57 | 32 | " | 11'6" | Gray fine to coarse SAND, some silt & fine gravel | 3 | 24 | 24 |
| | 26 | | | | | | | | | | | |
| | 27 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | |
| 20 | 29 | 15'-17' | D | 30 | 32 | 24 | Wet very dense | 17' | Brown-gray fine to crs. SAND, some F-II gravel & shale, TILL | 4 | 24 | 24 |
| | 30 | | | | | | | | | | | |
| | 31 | | | | | | | | | | | |
| | 32 | | | | | | | | | | | |
| | 33 | | | | | | | | | | | |
| | 34 | | | | | | | | | | | |
| | 35 | 20'-22' | D | 30 | 27 | 43 | Moist very dense | 37'0" | Gray fine to medium SAND, some silt & fine gravel cemented, TILL | 5 | 24 | 24 |
| | 36 | | | | | | | | | | | |
| | 37 | | | | | | | | | | | |
| | 38 | | | | | | | | | | | |
| 39 | 25'-27' | D | 30 | 41 | 47 | Wet very dense | | Gray fine to medium SAND, some silt, trace fine gravel | 6 | 24 | 24 | |
| 40 | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 30 | 43 | 30'-32' | D- | 40 | 17 | 15 | Wet medium dense | 37'0" | Gray fine SAND, some silt, trace fine gravel | 7 | 24 | 24 |
| | 44 | | | | | | | | | | | |
| | 45 | | | | | | | | | | | |
| | 46 | | | | | | | | | | | |
| | 47 | 35'-37' | D- | 25 | 16 | 12 | Wet dense | | Brown-gray fine to coarse SAND, some silt & fine gravel, TILL | 8 | 24 | 24 |

| | | |
|--|---|--|
| GROUND SURFACE TO <u>35'</u> | USED <u>1 1/2"</u> "CASING: THEN <u>S/S to 37'</u> | SUMMARY: Earth Boring <u>37'</u> Rock Coring _____ Samples <u>0</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense |

HOLE NO. **B-33**

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE _____
 HOLE NO. B-34
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Prov. Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Prop. Tank LOCATION PROVIDENCE, RI
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|------------------------|-------------------------|------------|---------------|---------|----------------------------------|-------|-------|
| At <u>9'6"</u> | after <u>1/2</u> Hours | Rods - " <u>AW</u> " | Type _____ | <u>S/S</u> | _____ | START <u>7/29/71</u> | _____ | _____ |
| casing <u>30'</u> | | Size I.D. <u>2 1/2"</u> | _____ | <u>1 3/8"</u> | _____ | COMPLETE <u>7/29/71</u> | _____ | _____ |
| At <u>9'</u> | after <u>3/4</u> Hours | Hammer Wt. <u>300#</u> | _____ | <u>140#</u> | BIT | TOTAL HRS. _____ | _____ | _____ |
| Hole Open | | Hammer Fall <u>24"</u> | _____ | <u>30"</u> | _____ | BORING FOREMAN <u>A. D'Amico</u> | _____ | _____ |
| | | | | | | INSPECTOR _____ | _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ | _____ |

LOCATION OF BORING

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|----------|-----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6' | To 6-12' | To 12-18' | | | | No | Pen | Rec |
| | | | | | | | | | | | | |
| | 6 | 0'-2' | D | 8 | 16 | 15 | Dry dense | 2' | Brown fine SAND, some silt & fine to medium gravel | 1 | 24" | 9" |
| | 7 | | | 12 | | | | | | | | |
| | 11 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 21 | | | | | | Wet very dense | | | | | |
| | 20 | 5'-7' | D | 16 | 25 | 21 | | 10' | Brown fine SAND, some silt | 2 | 24" | 12" |
| | 34 | | | 24 | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 49 | | | | | | | | | | | |
| 10 | 50 | | | | | | | | | | | |
| | 26 | 10'-12' | D | 23 | 31 | 38 | " | | Brown fine to medium SAND some fine to medium gravel little silt | 3 | 24" | 12" |
| | 38 | | | 30 | | | | | | | | |
| | 79 | | | | | | | | | | | |
| | 125 | | | | | | | | | | | |
| | 113 | | | | | | | | | | | |
| | 19 | 15'-17' | D | 35 | 40 | 37 | " | 15' | Brown fine SAND & silt | 4 | 24" | 12" |
| | 28 | | | 29 | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 44 | | | | | | | | | | | |
| 20 | 47 | | | | | | | | | | | |
| | 25 | 20'-22' | D | 17 | 26 | 37 | " | | | 5 | 24" | 12" |
| | 37 | | | 39 | | | | | | | | |
| | 57 | | | | | | | | | | | |
| | 72 | | | | | | | | | | | |
| | 167 | | | | | | | | | | | |
| | 48 | 25'-27' | D | 49 | 45 | 33 | " | | Gray-brown coarse to fine SAND, some fine to medium gravel, some silt TILL | 6 | 24" | 12" |
| | 110 | | | 45 | | | | | | | | |
| | 277 | | | | | | | | | | | |
| | 280 | | | | | | | | | | | |
| | 240 | | | | | | | | | | | |
| 30 | 51 | 30'-32' | D | 20 | 25 | 26 | " | | | 7 | 24" | 12" |
| | 110 | | | 29 | | | | | | | | |
| | 182 | | | | | | | | | | | |
| | 280 | | | | | | | | | | | |
| | 477 | | | | | | | | | | | |
| | | 35'-37' | D | 102 | 151 | 142 | " | 37' | | 8 | 24" | 12" |
| | | | | 141 | | | | | | | | |
| | | | | | | | | | Bottom of boring 37' | | | |
| 40 | | | | | | | | | | | | |

GROUND SURFACE TO 35' USED 2 1/2" CASING: THEN S/S to 37'

| | | | | |
|--|---|--|---|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>37'</u> Rock Coring _____ Samples <u>8</u> |
|--|---|--|---|--|

HOLE NO. B-34

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 3
 DATE _____
 HOLE NO. 35
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.5'

| | | | | |
|---|--|--|-----------------------------|--|
| GROUND WATER OBSERVATIONS At <u>8'8"</u> after _____ Hours Overnight At _____ after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>9/27/71</u> o.p. COMPLETE <u>9/28/71</u> p.p. TOTAL HRS. _____ BORING FOREMAN <u>C. Koehler</u> INSPECTOR _____ SOILS ENGR. _____ |
|---|--|--|-----------------------------|--|

LOCATION OF BORING: Sassafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|--|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Per | Rec | | |
| | | | | | | | | | | | | | | |
| 5 | 0 | 0'-2' | D | 1 | 2 | 6 | Dry medium dense | 4' | Miscellaneous FILL | 1 | 24' | 18 | | |
| | 7 | | | 6 | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | |
| 10 | 3 | 5'-7' | D | 5 | 3 | 3 | Moist loose | 9' | Gray fine to medium SAND, little silt, trace of fine to medium gravel (Fill) | 2 | 24' | 14 | | |
| | 3 | | | 2 | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | |
| 15 | 2 | | | | | | Wet soft | 21' | Gray sandy SILT (Fill) | 1 | 24' | 8 | | |
| | 1 | 10'-12' | D | 4 | 2 | 18' | | | | | | | | |
| | 2 | | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | | |
| 20 | 3 | 15'-17' | D | 5 | 3 | 1 | Wet medium stiff | 24' | Gray ORGANIC SILT with shells | 4 | 24' | 6 | | |
| | 3 | | | 4 | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| 25 | 6 | | | | | | Wet medium dense | 28' | Gray fine to coarse SAND, trace of silt (Fill) | 5 | 24' | 3 | | |
| | 4 | 20'-22' | D | 9 | 5 | 3 | | | | | | | | |
| | 2 | | | 3 | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | |
| 30 | 3 | | | | | | Wet very stiff | 34' | Gray SILT & fine Sand, little peat | 6 | 24' | 0 | | |
| | 6 | 25'-27' | D | 9 | 3 | 5 | | | | | | | | |
| | 7 | | | 11 | | | | | | | | | | |
| | 7 | 27'-28' | D | 7 | 5 | | | | | | | | | |
| 35 | 9 | 28'-29' | D | 5 | 6 | | " | 30' | Gray brown sandy PEAT | 6A | 12' | 12 | | |
| | 13 | | | | | | | | | | | | | |
| | 25 | 30'-32' | D | 26 | 15 | 12 | | | | | | | | |
| | 24 | | | 12 | | | | | | | | | | |
| 40 | 24 | 32'-34' | D | 12 | 13 | 12 | | 34' | Gray silty coarse to fine SAND, little fine to coarse gravel, trace of peat | 6B | 12' | 9 | | |
| | 23 | | | 12 | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | |
| | 21 | 35'-37' | D | 7 | 8 | 8 | | | | | | | | |
| 40 | 18 | | | 9 | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>97'</u> Rock Coring _____ Samples <u>19</u> |
|--|---|--|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 35

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | | | |
|--|---|---|--|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p>SAMPLER _____</p> <p>_____</p> <p>_____</p> <p>_____</p> | <p>CORE BAR _____</p> <p>_____</p> <p>_____</p> <p>BIT _____</p> | <p style="text-align: center;">Date _____ Time _____</p> <p>START _____</p> <p>COMPLETE _____</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|--|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----------------------------|-----|-----|----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Re | | |
| 45 | 32 | 40'-42' | D | 16 | 12 | 11 | Wet medium dense | 49' | Gray silty coarse to fine SAND, little fine to coarse gravel, trace of silt | - | 24' | 0 | | |
| | 25 | | | 11 | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | |
| 50 | 23 | 45'-46'6" | D | 8 | 7 | 8 | " | | | | | 9 | 18' | 0 |
| | 18 | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | |
| | 23 | 50'-52' | D | 6 | 5 | 5 | Wet medium stiff | | | | Gray SILT, little fine sand | 10 | 24' | 21 |
| 36 | | | 8 | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | |
| 55 | 36 | | | | | | | | | | | | | |
| | 55 | 55'-57' | D | 43 | 34 | 13 | wet very stiff | | | 11 | | 24' | 11 | |
| | 45 | | | 18 | | | | | | | | | | |
| | 84 | | | | | | | | | | | | | |
| 60 | 50 | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | |
| | 67 | 60'-62' | D | 12 | 11 | 22 | Wet hard | 60' | Dark gray SILT, clay layers | 12 | 24' | 11 | | |
| | 67 | | | 15 | | | | | | | | | | |
| | 56 | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 65 | 50 | 65'-67' | D | 16 | 14 | 14 | " | | | | | 13 | 24' | 10 |
| | 60 | | | 17 | | | | | | | | | | |
| | 58 | | | | | | | | | | | | | |
| | 73 | | | | | | | | | | | | | |
| 70 | 44 | | | | | | | | | | | | | |
| | 64 | 70'-72' | D | 7 | 10 | 11 | Wet very stiff | | | 14 | 24' | 14 | | |
| | 60 | | | 10 | | | | | | | | | | |
| | 41 | | | | | | | | | | | | | |
| 75 | 49 | | | | | | | | | | | | | |
| | 45 | | | | | | | | | | | | | |
| | 52 | 75'-77' | D | 9 | 16 | 15 | Wet Hard | | | 15 | 24' | 12 | | |
| | 87 | | | 21 | | | | | | | | | | |
| 80 | 93 | | | | | | | | | | | | | |
| | 113 | | | | | | | | | | | | | |
| | 117 | | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 35

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 35

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | BIT | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|----|--|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Re | | |
| 85 | 116 | 80'-82' | D | 9 | 9 | 5 | Wet very stiff | 85' | Dark gray SILT, clay layers | 16 | 24' | 16 | | |
| | 110 | | | | 14 | | | | | | | | | |
| | 106 | | | | | | | | | | | | | |
| | 112 | | | | | | | | | | | | | |
| | 103 | | | | | | | | | | | | | |
| 90 | 119 | 85'4"-87'4" | D | 5 | 10 | 12 | Wet very stiff | 91' | Gray SILT & fine Sand | 17 | 24' | 12 | | |
| | 112 | | | | | | | | | | | | | |
| | 115 | | | | | | | | | | | | | |
| | 145 | | | | | | | | | | | | | |
| 95 | 113 | 90'-92' | D | 15 | 26 | 28 | W/hard | 97' | Brown fine to medium SAND, some silt, trace of fine gravel | 18 | 24' | 5 | | |
| | | | | | 24 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 100 | | 95'-97' | D | 19 | 21 | 19 | Moist dense | 97' | Bottom of Boring 97'0" | 19 | 24' | 8 | | |
| | | | | | 22 | | | | | | | | | |

GROUND SURFACE TO _____

USED _____

"CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50 + Very Dense 15-30 V-Stiff

SUMMARY:

Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 35

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 3
 DATE _____
 HOLE NO. 36
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.2

| | | | | |
|--|--|--|-----------------------------|---|
| GROUND WATER OBSERVATIONS At <u>8'6"</u> after _____ Hours Casing Out At _____ after _____ Hours | Rods-"AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>10/7/71</u> COMPLETE <u>10/13/71</u> TOTAL HRS. _____ BORING FOREMAN <u>A. Gomes</u> INSPECTOR _____ SOILS ENGR. _____ |
|--|--|--|-----------------------------|---|

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No | Pen | Re | |
| 5 | 3 | 0'-2' | D | 3 | 6 | 4 | Wet loose | 4' | Gray brown fine to medium SAND, little fine to medium gravel | 1 | 24' | 12 | |
| | 4 | | | 3 | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 10 | 1 | 5'-7' | D | 1 | 1 | 1 | Wet loose | 9' | Gray brown fine to medium oil-soaked SAND, trace of medium gravel | 2 | 24' | 6 | |
| | 3 | | | 3 | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | |
| 15 | 4 | 10'-12' | D | 2 | 3 | 5 | Wet medium dense | | Brown fine to coarse SAND, some silt, little fine to medium gravel, FILL | 3 | 24' | 10 | |
| | 6 | | | 6 | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| 20 | 4 | 15'-17' | D | 11 | 6 | 4 | Wet loose | | | 4 | 24' | 11' | |
| | 6 | | | 3 | | | | | | | | | |
| | 9 | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | |
| 25 | P | 20'-21'6" | D | 14 | 11 | 7 | W/m/d | 21'6" | Brown fine SAND, trace of * organic silt & peat | 5A | 13' | 9' | |
| | P | 21'6"-22' | D | 8 | | | W/loose | | | 22'6" | 5B | 6" | 4' |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 30 | 6 | 25'-27' | D | 5 | 5 | 8 | Wet stiff | | Gray brown ORGANIC SILT, trace of peat, trace of fine gravel | 6 | 24' | 10' | |
| | 3 | | | 5 | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 35 | 30 | 30'-32' | D | 2 | 2 | 2 | Wet medium stiff | 35' | | 7 | 24' | 9' | |
| | 22 | | | 3 | | | | | | | | | |
| | 17 | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | |
| 40 | 17 | 35'-37' | D | 2 | 2 | 2 | Wet/m stiff | 38' | Brown ORGANIC SILT & medium to fine Sand | 8 | 24' | 7" | |
| | 62 | | | 5 | | | | | | | | | |
| | 34 | | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 107'
 Rock Coring _____
 Samples 22

HOLE NO. 36

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 36

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | BIT | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|--|---|---------------------------|-----|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| | | | | | | | | | | | | | |
| 45 | 37 | 40'-42' | D | 13 | 20 | 21 | Moist dense | Brown fine to coarse SAND, some silt, trace of fine to medium gravel | 9 | 24' | 10' | | |
| | 38 | | | 16 | | | | | | | | | |
| | 35 | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | |
| 50 | 37 | 45'-47' | D | 23 | 25 | 37 | Moist very dense | | Gray medium to fine SAND, some silt, trace of medium gravel | 10 | 24' | 10' | |
| | 75 | | | 43 | | | | | | | | | |
| | 65 | | | | | | | | | | | | |
| | 55 | | | | | | | | | | | | |
| 55 | 37 | 50'-52' | D | 23 | 13 | 33 | " | | | Gray fine SAND, some silt | 11 | 24' | 9' |
| | 56 | | | 39 | | | | | | | | | |
| | 72 | | | | | | | | | | | | |
| | 60 | | | | | | | | | | | | |
| 60 | 32 | 55'-57' | D | 23 | 22 | 12 | Moist medium dense | Gray fine SAND, some silt | | | 12 | 24' | 11' |
| | 38 | | | 5 | | | | | | | | | |
| | 40 | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | |
| 65 | 44 | 60'-62' | D | 14 | 16 | 17 | Moist dense | | Gray fine SAND, some silt | | 13 | 24' | 10' |
| | 56 | | | 18 | | | | | | | | | |
| | 64 | | | | | | | | | | | | |
| | 65 | | | | | | | | | | | | |
| 70 | 45 | 65'-67' | D | 12 | 11 | 11 | Moist medium dense | | | Gray fine SAND, some silt | - | 24' | 0" |
| | 40 | | | 14 | | | | | | | | | |
| | 50 | 67'-69' | D | 16 | 12 | 11 | Moist medium dense | 14 | | | 24' | 11" | |
| | 56 | | | 13 | | | | | | | | | |
| 75 | 60 | 70'-72' | D | 7 | 13 | 10 | Moist medium dense | Gray fine to coarse SAND, some fine gravel, trace of silt | | | 15 | 24' | 5" |
| | 58 | | | 8 | | | | | | | | | |
| | 80 | | | | | | | | | | | | |
| | 160 | | | | | | | | | | | | |
| 80 | 80 | 75'-77' | D | 21 | 13 | 15 | Wet dense | | Gray fine to coarse SAND, some fine gravel, trace of silt | | 16 | 24' | 11" |
| | 78 | | | 19 | | | | | | | | | |
| | 103 | | | | | | | | | | | | |
| | 90 | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:

Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 36

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 36

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|-----------------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | | | 85 | 50 | 80'-82' | | | | D | 10 | 7 |
| | 61 | | | 10 | | | | | | | | |
| | 75 | | | | | | | | | | | |
| | 79 | | | | | | | | | | | |
| | 82 | | | | | | | | | | | |
| 90 | 100 | 85'-87' | D | 20 | 12 | 13 | " | (5' Running Sand in Casing) | 18 | 24 | 9 | |
| | 98 | | | 16 | | | | | | | | |
| | 103 | | | | | | | | | | | |
| | 90 | | | | | | | | | | | |
| | 85 | | | | | | | | | | | |
| 95 | 80 | 90'-92' | D | 19 | 15 | 17 | Wet dense | 100' | 19 | 24 | 10 | |
| | 80 | | | 16 | | | | | | | | |
| | 90 | | | | | | | | | | | |
| | 65 | | | | | | | | | | | |
| | 64 | | | | | | | | | | | |
| 100 | 69 | 95'-97' | D | 23 | 14 | 13 | " | 107' | 20 | 24 | 9 | |
| | 59 | | | 23 | | | | | | | | |
| | 60 | | | | | | | | | | | |
| | 62 | | | | | | | | | | | |
| | 63 | | | | | | | | | | | |
| 105 | 64 | 100'-102' | D | 10 | 10 | 15 | " | Bottom of Boring 107'0" | 21 | 24 | 11 | |
| | 95 | | | 17 | | | | | | | | |
| | 100 | | | | | | | | | | | |
| | 101 | | | | | | | | | | | |
| | 106 | | | | | | | | | | | |
| 110 | | 105'-107' | D | 13 | 11 | 18 | " | | 22 | 24 | 10 | |
| | | | | 16 | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:

Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 36

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE _____
 HOLE NO. 37
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.6

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME TANK Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------------|--|--|--------|---------|-----------|---------------------------------|------|
| At <u>8'6"</u> | after <u>0</u> Hours | | | | | | START <u>10/7/71</u> | a.m. |
| <u>95' Casing</u> | | | | | | | COMPLETE <u>10/12/71</u> | p.m. |
| At <u>8'6"</u> | after <u>19</u> Hours | | | | | | TOTAL HRS. _____ | |
| | | | | | | | BORING FOREMAN <u>A. Cortez</u> | |
| | | | | | | | INSPECTOR <u>R. Varnum</u> | |
| | | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING: Sasafra Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------------|------------------------------|----------------------|---|--------|-----|-----|----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 5 | 9 | 0'-2' | D | 7 | 17 | 17 | Dry dense | | Brown fine SAND, little fine gravel, silt, cinders, FILL | 1 | 24" | 24" | |
| | 20 | | | 20 | | | | | | | | | |
| | 105 | | | | | | | | | | | | |
| | 70 | | | | | | | 4' | | | | | |
| | 47 | | | | | | | | | | | | |
| 10 | 13 | 5'-7' | D | 6 | 6 | 7 | Moist medium dense | 8' | Brown black fine SAND & Silt (Fuel odor noted) FILL | 2 | 24" | 24" | |
| | 12 | | | 4 | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| 15 | 5 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 7 | 10'-12' | D | 2 | P | 1 | Wet loose | | Black sandy SILT (Fuel odor noted) FILL | 3 | 24" | 12" | |
| | 5 | | | 1 | | | | | | | | | |
| 20 | 6 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 11 | 15'-17' | D | 13 | 6 | 3 | | 16'6" | | | - | 24" | 0" |
| | 10 | | | 1 | | | | 17'5" | Black gray fine SAND & Silt | | - | 24" | 0" |
| 25 | 23 | 17'-19' | D | 1 | 13 | 10 | | | | | | | |
| | 33 | | | 9 | | | | | | | | | |
| | 24 | | | | | | | | | | | | |
| | 30 | 20'-22' | D | 30 | 17 | 16 | Wet dense | | Black gray coarse to medium SAND, some fine to medium gravel (Fuel odor noted) (FILL) | 4 | 24" | 6" | |
| | 38 | | | 20 | | | | | | | | | |
| 30 | 50 | 22'-24' | D | 11 | 13 | 15 | | 23'6" | | 5 | 24" | 6" | |
| | 66 | | | 16 | | | | | | | | | |
| | 50 | | | | | | | | | | | | |
| | 46 | 25'-26'6" | D | 12 | 11 | 9 | Wet very stiff | | Gray brown SILT, some clay, trace of fine sand (Fuel odor noted) | 6 | 18" | 16" | |
| | 50 | | | | | | | | | | | | |
| 35 | 62 | | | | | | | | | | | | |
| | 74 | | | | | | | | | | | | |
| | 65 | | | | | | | | | | | | |
| | 126 | 30'-32' | D | 14 | 12 | 13 | " | | | 7 | 24" | 24" | |
| | 110 | | | 14 | | | | | | | | | |
| 40 | 109 | | | | | | | | | | | | |
| | 148 | | | | | | | | | | | | |
| | 145 | | | | | | | | | | | | |
| | 25 | 35'-37' | D | 15 | 14 | 15 | Wet hard | | | 8 | 24" | 13" | |
| 30 | | | 16 | | | | | | | | | | |
| 62 | 37'-38'6" | D | 12 | 24 | 19 | | | | | 9 | 18" | 16" | |
| 60 | 38'6"-39' | D | 19 | | | Wet/v stiff | 38'6" | Gray SILT, some clay | 9A | 6" | 4" | | |
| 59 | | | | | | | | | | | | | |

| | | | | | | | | | |
|---------------------------------|------------------|---|---------------|----------------------|--|----------------------|-----------------------|-------------------------|--|
| GROUND SURFACE TO _____ | | USED _____ | | CASING: _____ | | THEN _____ | | SUMMARY: | |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | Cohesionless Density | | Cohesive Consistency | | Earth Boring <u>97'</u> | |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 Loose | 0-4 Soft | 30+ Hard | | | Rock Coring <u>19</u> | | |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | 4-8 M/Stiff | | | | | Samples _____ | |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | 8-15 Stiff | | | | | | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | 15-30 V-Stiff | | | | | | |
| HOLE NO. <u>37</u> | | | | | | | | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I

SHEET 2 OF 3

DATE _____

HOLE NO. 37

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | |
|---|---|---|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER _____ CORE BAR _____ Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | START _____ o.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|----------|-----------|------------------------------|---------------------|---|--------|-----|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 45 | 66 | 41'6"-43'6" | UP | PR/SS/2" | 28 | BLOWS/22" | Wet hard | 45' | Gray SILT, little clay, trace of fine sand | UP | 1 | 24' | 12" |
| | 36 | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | |
| | 70 | | | | | | | | | | | | |
| 50 | 93 | 45'-47' | D | 14 | 20 | 26 | " | 53' | Gray brown SILT, & fine Sand | UP | 10 | 24' | 10" |
| | 145 | | | | | | | | | | | | |
| | 212 | | | | | | | | | | | | |
| | 215 | | | | | | | | | | | | |
| 55 | 230 | 50'-52' | D | 19 | 21 | 26 | " | 60' | Lost all but 2" of Piston Put in Jar -- Gray fine to medium SAND, little silt | UP | 11 | 24' | 18" |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 60 | | 53'-55' | UP | 24 | BLOWS/2' | | " | 65' | Gray fine sandy SILT | UP | 2 | 24' | 2" |
| | 39 | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | |
| 65 | 44 | 60'-62' | D | 11 | 12 | 14 | Wet medium dense | 65' | Gray fine to medium SAND, little silt (Running up casing) | UP | 12 | 24' | 10" |
| | 23 | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | |
| 70 | 43 | 65'-67' | D | 10 | 12 | 12 | Wet medium dense | 65' | At 70' trace of medium gravel | UP | 13 | 24' | 16" |
| | 40 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 34 | | | | | | | | | | | | |
| 75 | 58 | 70'-72' | D | 7 | 8 | 11 | " | 65' | Gray fine to coarse SAND, little silt, trace of fine to medium gravel | UP | 14 | 24' | 20" |
| | 53 | | | | | | | | | | | | |
| | 60 | | | | | | | | | | | | |
| | 70 | | | | | | | | | | | | |
| 80 | 77 | 75'-77' | D | 9 | 8 | 7 | " | 65' | | UP | 15 | 24' | 12" |
| | 87 | | | | | | | | | | | | |
| | 49 | | | | | | | | | | | | |
| | 58 | | | | | | | | | | | | |
| | 206 | | | | | | | | | | | | |

| | | | | |
|---|---|--|--|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense | _____ Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
|---|---|--|--|--|

HOLE NO. **37**

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3
 DATE _____
 HOLE NO. 37
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | p.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | BIT _____ | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From- To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No | Pen | Rec |
| 85 | 125 | 80'-82' | D | 7 | 6 | 11 | Wet medium dense | 86' | Gray fine to coarse SAND, little silt, trace of fine to medium gravel (Sand Running) | 16 | 24' | 10' |
| | 115 | | | 8 | | | | | | | | |
| | 100 | | | | | | | | | | | |
| | 78 | | | | | | | | | | | |
| | 100 | | | | | | | | | | | |
| 90 | 66 | 85'-87' | D | 9 | 8 | 30 | Wet very dense | 86' | Gray fine to coarse SAND, some fine to medium gravel, some silt, TILL | 17 | 24' | 12' |
| | 66 | | | 57 | | | | | | | | |
| | 112 | | | | | | | | | | | |
| | 111 | | | | | | | | | | | |
| 95 | 98 | 90'-92' | D | 18 | 21 | 21 | Wet dense | 86' | " Cobbles | 18 | 24' | 8' |
| | 135 | | | 21 | | | | | | | | |
| | 175 | | | | | | | | | | | |
| | 215 | | | | | | | | | | | |
| 95 | 215 | 95'-97' | D | 48 | 38 | 48 | Wet/v dense | 97' | Bottom of Boring 97'0" | 19 | 24' | 20' |
| | | | | 30 | | | | | | | | |
| | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

| | | |
|--|---|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense |
| | | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 37

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 3
 DATE _____
 HOLE NO. 38
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.5

| | | | | |
|---|---|---|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>8'5"</u> after <u>0</u> Hours At <u>8'6"</u> after <u>18</u> Hours <u>100' Casing</u></p> | <p>Rods-"AW" Type _____ Size I.D. _____ Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u></p> | <p>CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u></p> | <p>CORE BAR. _____ BIT _____</p> | <p>Date _____ Time _____ START <u>10/13/71</u> COMPLETE <u>10/14/71</u> TOTAL HRS. _____ BORING FOREMAN <u>A. Cortez</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____</p> |
|---|---|---|---|---|

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|------|------|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen. | Ret. | |
| 5 | - | 0'-2' | D | 3 | 8 | 8 | Dry medium dense | 4' | Brown fine to medium SAND & Gravel, little silt, FILL | 1 | 24" | 24" | |
| | 11 | | | 9 | | | | | | | | | |
| | 13 | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| 10 | 5 | 5'-7' | D | 8 | 2 | 6 | Moist medium dense | 10' | Black gray fine to medium SAND, some fine gravel, little silt (fuel odor noted) FILL | 2 | 24" | 24" | |
| | 7 | | | 6 | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| 15 | 8 | | | | | | | 19' | Gray black fine to medium SAND, little silt (fuel odor noted) FILL | 3 | 24" | 18" | |
| | woh | 10'-12' | D | 4 | 5 | 4 | Wet loose | | | | | | |
| | woh | | | 5 | | | | | | | | | |
| | 1 | | | | | | | | | | | | |
| 20 | 3 | | | | | | " | 19' | Black gray ORGANIC SILT, some fine sand, trace of sea shells | 4 | 24" | 6" | |
| | 4 | 15'-17' | D | 1 | woh | 2 | | | | | | | |
| | 3 | | | woh | | | | | | | | | |
| | 4 | 17'-19' | D | 2 | 1 | 1 | | | | | | | |
| 25 | 2 | | | woh | | | | 30' | Gray ORGANIC SILT, trace of sea shells, fine sand & peat | - | 24" | 0" | |
| | 1 | 19'-20' | D | 2 | 2 | | Wet loose | | | | | | |
| | 14 | 20'-22' | D | 1 | 1 | 1 | | | | | | | |
| | 9 | | | 1 | | | | | | | | | |
| 30 | 9 | 22'-24' | D | 3 | 3 | 2 | " | 35'6" | Brown PEAT | " | " | " | |
| | 8 | | | 3 | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | |
| 35 | 12 | | | | | | | 35'6" | Gray fine to medium SAND & Silt, some fine gravel | 5 | 18" | 15" | |
| | 10 | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| 40 | 30 | 30'-31'6" | D | 2 | 3 | 4 | Wet soft | 35'6" | Brown PEAT | 6 | 6" | 6" | |
| | 26 | 31'6"-32' | D | 3 | | | | | | | | | |
| | 23 | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | |
| 40 | 29 | | | | | | | 35'6" | Brown PEAT | 7 | 6" | 0" | |
| | 36 | 35'-35'6" | D | 6 | | | Wet medium dense | | | | | | |
| | 27 | 35'6"-37' | D | 4 | 6 | 7 | | | | | | | |
| | 22 | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | |

| | | | |
|--|---|---|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| TOWN PRESS - EAST PROV. | | | SUMMARY: Earth Boring <u>100'</u> Rock Coring <u>19</u> Samples _____ HOLE NO 38 |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 38

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | p.m. |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 45 | 30 | 40'-42' | D | 8 | 8 | 12 | Wet medium dense | 45' | Gray fine to medium SAND, & fine gravel, some silt | 8 | 24" | 12" | |
| | 27 | | | 8 | | | | | | | | | |
| | 31 | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | |
| 50 | 50 | 45'-47' | D | 5 | 5 | 6 | Wet medium dense | 50' | Gray brown fine SAND, little silt (Running up Pipe) | 9 | 24" | 22" | |
| | 40 | | | 8 | | | | | | | | | |
| | 38 | | | | | | | | | | | | |
| | 45 | | | | | | | | | | | | |
| | 65 | | | | | | | | | | | | |
| 55 | 19 | 50'-52' | D | 8 | 8 | 21 | Wet dense | 55' | Gray fine SAND, little fine gravel, little silt | 10 | 24" | 20" | |
| | 20 | | | 23 | | | | | | | | | |
| | 65 | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | |
| | 77 | | | | | | | | | | | | |
| 60 | 62 | 55'-57' | D | 9 | 11 | 28 | Wet very dense | 60' | Gray brown fine to coarse SAND, some fine to coarse gravel & silt, cobble | 11 | 24" | 24" | |
| | 58 | | | 38 | | | | | | | | | |
| | 60 | | | | | | | | | | | | |
| | 68 | | | | | | | | | | | | |
| | 80 | | | | | | | | | | | | |
| 65 | 56 | 60'-62' | D | 14 | 20 | 17 | Wet dense | 65' | | 12 | 24" | 10" | |
| | 64 | | | 14 | | | | | | | | | |
| | 69 | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | |
| | 51 | | | | | | | | | | | | |
| 70 | 38 | 65'-67' | D | 10 | 10 | 12 | Wet medium dense | 70' | Gray fine to coarse SAND & Silt, some fine gravel | 13 | 24" | 8" | |
| | 46 | | | 14 | | | | | | | | | |
| | 52 | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | |
| 75 | 25 | 70'-72' | D | 16 | 12 | 16 | Wet medium dense | 75' | Gray fine SAND & Silt | 14 | 24" | 16" | |
| | 40 | | | 15 | | | | | | | | | |
| | 47 | | | | | | | | | | | | |
| | 56 | | | | | | | | | | | | |
| | 62 | | | | | | | | | | | | |
| 80 | 65 | 75'-77' | D | 15 | 20 | 21 | Wet dense | 80' | Gray fine SAND & Silt, trace of fine gravel | 15 | 24" | 10" | |
| | 73 | | | 21 | | | | | | | | | |
| | 66 | | | | | | | | | | | | |
| | 106 | | | | | | | | | | | | |
| | 118 | | | | | | | | | | | | |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston IP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | HOLE NO. <u>38</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 38

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | |
|--|--|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____ SAMPLER _____ CORE BAR _____</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date _____ Time _____</p> <p>START _____ o.m</p> <p>COMPLETE _____ p.m</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|--|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From | To | | | | | No. | Pen | Rec |
| | | | | 0-6 | 6-12 | 12-18 | | | | | | |
| 85 | 70 | 80'-82' | D | 20 | 8 | 8 | Wet medium dense | | Gray fine SAND, little silt, trace of fine gravel | 16 | 24' | 24' |
| | 45 | | | 8 | | | | | | | | |
| | 38 | | | | | | | | | | | |
| | 46 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | |
| 90 | 55 | 85'-87' | D | 23 | 24 | 26 | Wet very dense | | Gray fine to coarse SAND & fine gravel with silt | 17 | 24' | 18' |
| | 49 | | | 27 | | | | | | | | |
| | 54 | | | | | | | | | | | |
| | 46 | | | | | | | | | | | |
| 95 | 41 | | | | | | | | | | | |
| | 42 | 90'-92' | D | 15 | 18 | 12 | Wet dense | | Gray fine to coarse SAND, some silt & fine to medium gravel | 18 | 24' | 5' |
| | 45 | | | 22 | | | | | | | | |
| | 42 | | | | | | | | | | | |
| 100 | 35 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| | 36 | 95'-97' | D | 18 | 13 | 16 | " | | Gray fine to coarse SAND & Silt, trace of fine gravel | 19 | 24' | 8' |
| | 47 | | | 20 | | | | | | | | |
| | 183 | | | | | | | | | | | |
| | 106 | | | | | | | | | | | |
| | | 100'-100'3" D | | | | | | | Refusal at 100'0" | | | |
| | | | | | | | | | 51 Blows - 140# - 2" Pen. | | | |
| | | | | | | | | | 60 Blows - 300# - 1" Pen. | | | |

| | | | | |
|---|--|--|--|---|
| <p>GROUND SURFACE TO _____ USED _____ "CASING: THEN _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense</p> | <p>Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> |
|---|--|--|--|---|

HOLE NO. 38

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R. I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

DATE _____
 HOLE NO. 39
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.9

| | | | | |
|---|--|--|---------------------------------|--|
| GROUND WATER OBSERVATIONS At <u>8'4"</u> after _____ Hours At _____ after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>10/13/71</u> o.p. COMPLETE <u>10/13/71</u> p.p. TOTAL HRS. _____ BORING FOREMAN <u>A. Gomes</u> INSPECTOR _____ SOILS ENGR. _____ |
|---|--|--|---------------------------------|--|

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strato Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Ret |
| | | | | | | | | | | | | |
| 5 | 7 | 0'-2' | D | 5 | 9 | 9 | Dry medium dense | | Brown fine to coarse SAND, some fine to medium gravel, FILL | 1 | 24" | 10 |
| | 11 | | | 11 | | | | | | | | |
| | 12 | | | | | | | | | | | |
| | 13 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| 10 | 14 | 5'-7' | D | 7 | 7 | 9 | Moist soft | 7' | Gray brown ORGANIC SILT, little sand, Hydraulic Fill | 2 | 24" | 11 |
| | 12 | | | 6 | | | | | | | | |
| | 11 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| 15 | 2 | 10'-12' | D | 2 | 1 | 1 | Moist soft | | | 3 | 24" | 11 |
| | 1 | | | 1 | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| 20 | 3 | 15'-17' | D | P | 1 | 1 | Moist soft | 20' | gray brown ORGANIC SILT | 4 | 24" | 10 |
| | 4 | | | 1 | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| 25 | 14 | 20'-22' | D | 2 | 2 | 2 | Moist soft | 23' | | 5 | 24" | 14 |
| | 13 | | | 2 | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| 30 | 40 | 25'-27' | D | 14 | 13 | 18 | Moist dense | | Dark brown coarse to fine SAND, some silt, little fine to medium gravel | 6 | 24" | 10 |
| | 45 | | | 22 | | | | | | | | |
| | 47 | | | | | | | | | | | |
| | 31 | | | | | | | | | | | |
| | 24 | | | | | | | | | | | |
| 35 | 31 | 30'-32' | D | 13 | 10 | 16 | Wet dense | 34' | Brown fine to coarse SAND, some medium to coarse gravel | 7 | 24" | 10 |
| | 38 | | | 14 | | | | | | | | |
| | 37 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| | 35 | | | | | | | | | | | |
| 40 | 32 | 35'-37' | D | 17 | 18 | 25 | Wet dense | | | 8 | 24" | 9 |
| | 38 | | | 22 | | | | | | | | |
| | 45 | | | | | | | | | | | |
| | 55 | | | | | | | | | | | |
| 64 | | | | | | | | | | | | |

| | | | |
|--|--|--|---|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>57'</u> Rock Coring _____ Samples <u>12</u> HOLE NO. <u>39</u> |
|--|--|--|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. **71-396**

DATE _____
 HOLE NO. 39
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| | | |
|--|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR.</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date Time</p> <p>START _____ o.n.</p> <p>COMPLETE _____ p.n.</p> <p>TOTAL HRS. _____ p.n.</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|------------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 40 | 40 | 40'-42' | D | 30 | 26 | 24 | Moist dense | | Brown fine to coarse SAND, some medium to coarse gravel | 9 | 24 | 10 |
| | 92 | | | 19 | | | | | | | | |
| | 95 | | | | | | | | | | | |
| | 53 | | | | | | | | | | | |
| 45 | 56 | 45'-47' | D | 19 | 20 | 25 | Moist very dense | | | 10 | 24 | 11 |
| | 59 | | | 28 | | | | | | | | |
| | 99 | | | | | | | | | | | |
| | 90 | | | | | | | | | | | |
| 50 | 56 | 50'-52' | D | 21 | 23 | 21 | Moist dense | | | 11 | 24 | 6 |
| | 60 | | | 26 | | | | | | | | |
| | 62 | | | | | | | | | | | |
| | 55 | | | | | | | | | | | |
| 55 | 66 | 55'-57' | D | 25 | 27 | 27 | Moist/v dense | 57' | | 12 | 24 | 9 |
| | | | | 24 | | | | | | | | |
| 60 | | | | | | | | Bottom of Boring 57'0" | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
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| | | | |
|--|--|--|--|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>"CASING: THEN _____"</p> <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> <p style="text-align: center; border: 1px solid black; padding: 2px;">HOLE NO 39</p> |
|--|--|--|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 40
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.7

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

| | | | |
|---|---|---|--|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> At <u>18'</u> after _____ Hours Casing <u>all out</u> At _____ after _____ Hours | Rods-"AW" Type _____ Size I.D. <u>4" & BX</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>10/14/71</u> o.m. COMPLETE <u>10/15/71</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>R. Faria</u> INSPECTOR _____ SOILS ENGR. _____ |
|---|---|---|--|

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 5 | 10 | | | | | | | | Miscellaneous FILL | | | |
| | 12 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 17 | | | | | | | | | | | |
| 10 | 16 | | | | | | | | | | | |
| | 16 | | | | | | | | | | | |
| | 15 | | | | | | 10' | | | | | |
| | 3 | 10'-12' | D | 6 | 5 | 3 | Moist medium stiff | | Gray SILT & fine SAND, FILL | 1 | 24" | 18 |
| 15 | 4 | | | 2 | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 6 | 15'-17' | D | 5 | 3 | 2 | Moist stiff | 15' | Gray ORGANIC SILT, some fine sand seams, trace of fine gravel | 2 | 24" | 20 |
| 20 | 7 | | | 7 | | | | | | | | |
| | 8 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 9 | 20'-22' | D | 6 | 7 | 7 | Moist medium dense | | Dark gray medium to fine SAND, some fine to medium gravel, little silt | 3 | 24" | 21 |
| 25 | 14 | | | 8 | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 24 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |
| | 17 | 25'-27' | D | 13 | 10 | 16 | " | | | 4 | 24" | 20 |
| 30 | 20 | | | 14 | | | | | | | | |
| | 22 | | | | | | | | | | | |
| | 24 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | |
| | 21 | 30'-32' | D | 12 | 14 | 13 | Moist medium dense | | Brown silty coarse to fine SAND, little fine gravel | 5 | 24" | 18 |
| 35 | 30 | | | 9 | | | | | | | | |
| | 36 | | | | | | | | | | | |
| | 38 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | |
| 40 | 32 | 35'-37' | D | 12 | 10 | 8 | Moist stiff | 35' | Brown SILT, trace of fine sand | 6 | 24" | 20 |
| | 48 | | | 6 | | | | | | | | |
| | 54 | 37'6"-39'6" | D | 34 | 21 | 19 | Moist dense | 37'6" | Brown fine to medium SAND, some medium to fine gravel, little silt | 7 | 24" | 18 |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>74</u> Rock Coring _____ Samples <u>14</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 30+ Hard | HOLE NO. <u>40</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 40

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR | Date | Time |
|---|--------|---------|-----------|----------------------|-------|
| At _____ after _____ Hours Type _____ | _____ | _____ | _____ | START _____ | _____ |
| At _____ after _____ Hours Size I.D. _____ | _____ | _____ | _____ | COMPLETE _____ | _____ |
| Hammer Wt. _____ | _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ |
| Hammer Fall _____ | _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | INSPECTOR _____ | _____ |
| | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|----------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Re |
| | | (Washed & Drove BX to 72') | | | | | | | | | | |
| 45 | | 45'-47' | D | 7 17 | 16 | 15 | Moist dense | | Gray medium to fine SAND, some fine gravel, little silt | 8 | 24" | 20' |
| 50 | | 50'-52' | D | 13 14 | 15 | 16 | Moist very stiff | 50' | Brown SILT & fine to coarse SAND, trace of medium gravel | 9 | 24" | 19' |
| 55 | | 55'-57' | D | 10 15 | 14 | 15 | " | | | 10 | 24" | 20' |
| 60 | | 60'-62' | D | 23 18 | 22 | 15 | Moist hard | | Brown SILT & fine Sand, little fine to medium gravel | 11 | 24" | 19' |
| 65 | | 65'-67' | D | 22 30 | 27 | 30 | Moist very dense | 65' | Gray medium to fine SAND, little medium to fine gravel, little silt, sandy TILL | 12 | 24" | 20' |
| 70 | | 70'-72' | D | 22 30 | 22 | 30 | " | | | 13 | 24" | 22' |
| 75 | | 72'-74' | D | 20 41 | 33 | 37 | | 74' | Bottom of Boring 74'0" | 14 | 24" | 20' |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 40

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 2
 DATE _____
 HOLE NO. 41
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.2

| GROUND WATER OBSERVATIONS | | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|------------------------|-------------------------|---------------|-----------|--------------------------------|-------|------|
| At <u>8'3"</u> | after _____ Hours | Rods - "AW" | Type _____ | <u>S/S</u> | _____ | START <u>10/14/71</u> | _____ | o.p. |
| <u>Casing</u> | | Type _____ | Size I.D. <u>2 1/2"</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>10/15/71</u> | _____ | o.p. |
| At _____ | after _____ Hours | Hammer Wt. <u>300#</u> | Hammer Fall <u>24"</u> | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | | |
| | | | | <u>30"</u> | | BORING FOREMAN <u>A. Gomes</u> | | |
| | | | | | | INSPECTOR _____ | | |
| | | | | | | SOILS ENGR. _____ | | |

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Ret | | |
| 5 | | 0'-2' | D | 2 | 2 | 1 | Moist loose | 10' | Gray brown fine to medium SAND, FILL | 1 | 24' | 10' | | |
| | | | | 1 | | | | | | | | | | |
| 10 | | 5'-7' | D | 4 | 4 | 1 | " | 10' | Brown fine to coarse SAND, trace of silt, FILL (oil odor noted) | 2 | 24' | 12' | | |
| | | | | 1 | | | | | | | | | | |
| 15 | 4 | 10'-12' | D | 6 | 5 | 7 | Moist medium dense | 16' | Brown fine SAND, trace of silt and fine gravel (Oil odor noted) | 3 | 24' | 9' | | |
| | 13 | | | 8 | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | |
| | 10 | 15'-17' | D | 8 | 8 | 13 | Moist dense | | | | | 4 | 24' | 14' |
| 20 | 11 | | | | | | | 16' | Brown fine SAND, trace of silt and fine gravel (Oil odor noted) | | | | | |
| | 12 | | | 14 | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | |
| | 20 | 20'-22' | D | 16 | 10 | 15 | " | | | | | 5 | 24' | 9' |
| 25 | 20 | | | 19 | | | | 16' | Brown fine SAND, trace of silt and fine gravel (Oil odor noted) | | | | | |
| | 23 | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | |
| | 32 | 25'-27' | D | 12 | 12 | 18 | " | | | | | 6 | 24' | 10' |
| 30 | 33 | | | 19 | | | | 29' 6" | Gray brown fine to coarse SAND and Silt, little fine to medium gravel, TILL | | | | | |
| | 40 | | | | | | | | | | | | | |
| | 35 | 30'-32' | D | 24 | 26 | 20 | Moist dense | | | | | 7 | 24' | 6' |
| | 37 | | | 23 | | | | | | | | | | |
| 35 | 40 | | | | | | | 29' 6" | Gray brown fine to coarse SAND and Silt, little fine to medium gravel, TILL | | | | | |
| | 37 | 35'-37' | D | 21 | 24 | 20 | Moist very dense | | | | | 8 | 24' | 8' |
| | 45 | | | 31 | | | | | | | | | | |
| | 43 | | | | | | | | | | | | | |
| 40 | 39 | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

| | | |
|--|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense |
| | | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |

SUMMARY:
 Earth Boring 52'
 Rock Coring _____
 Samples 11
HOLE NO. 41

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 41

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | g.m |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec |
| 45 | 30 | 40'-42' | D | 22 | 21 | 20 | Moist dense | Gray brown fine to coarse SAND and Silt, little fine to medium gravel, TILL | 9 | 24" | 10" | |
| | 35 | | | 21 | | | | | | | | |
| | 50 | | | | | | | | | | | |
| | 85 | | | | | | | | | | | |
| | 58 | | | | | | | | | | | |
| 50 | 55 | 45'-47' | D | 22 | 26 | 28 | Moist very dense | Bottom of Boring 52'0" | 10 | 24" | 8" | |
| | 60 | | | 30 | | | | | | | | |
| | 62 | | | | | | | | | | | |
| 55 | 54 | | | | | | | | | | | |
| | 50 | 50'-52' | D | 24 | 32 | 42 | " | | 11 | 24" | - | |
| | | | | 36 | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 41

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE _____

HOLE NO. 42

LINE & STA. _____

OFFSET _____

SURF. ELEV. 8.7

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | | RODS-"AW" Type | CASING | SAMPLER | CORE BAR. | Date | | o.p. p.m. p.m. |
|---------------------------|-------------------|-------|------------|-------------------|--------|---------------|------------|-----------------|------|----------------------|
| At | | after | Hours | | | | | START | Time | |
| At | <u>13'6"</u> | after | <u>1/4</u> | | | <u>S/S</u> | | <u>10/15/71</u> | | |
| | <u>55' Casing</u> | | | | | <u>1 3/8"</u> | | <u>10/15/71</u> | | |
| At | <u>8'6"</u> | after | _____ | | | <u>140#</u> | | | | |
| | <u>No Casing</u> | | | | | <u>30"</u> | <u>BIT</u> | | | |

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 5 | -- | 0'-2' | D | 2 | 3 | 3 | Dry loose | 5' | Brown black fine to medium SAND & fine Gravel, some silt, FILL | 1 | 24' | 18' | |
| | 2 | | | 3 | | | | | | | | | |
| | 1 | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| 10 | 1 | 5'-7' | D | 1 | 2 | 5 | Wet loose | 10' | Brown fine to medium SAND, some silt & fine gravel, FILL | 2 | 24' | 20' | |
| | 3 | | | 2 | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 15 | 3 | 10'-12' | D | 5 | 6 | 6 | Wet medium dense | 15' | Brown fine to medium SAND & Silt, some fine gravel, FILL | 3 | 24' | 8' | |
| | 5 | | | 7 | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| 20 | 15 | 15'-17' | D | 23 | 13 | 10 | Wet/m dense | 18' | Brown fine to coarse SAND, some fine gravel, little silt, FILL | 4 | 24' | 10' | |
| | 14 | | | 13 | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| 25 | 15 | 20'-22' | D | 10 | 8 | 6 | Wet stiff | 22' | Black brown SILT, trace of fine sand | 5 | 24' | 12' | |
| | 8 | | | 7 | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| 30 | 30 | 25'-26'6" | D | 14 | 11 | 12 | Wet/m dense | 26'6" | Brown fine to coarse SAND, some silt, little fine gravel, FILL | 6 | 13' | 18' | |
| | 35 | 26'6"-27' | D | 11 | | | " | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| 35 | 14 | 30'-32' | D | 11 | 18 | 20 | Wet dense | 30' | Black fine SAND, some organic silt, trace of fine gravel | 7 | 24' | 20' | |
| | 20 | | | 22 | | | | | | | | | |
| | 23 | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | |
| 40 | 31 | 35'-37' | D | 35 | 77 | 33 | Wet hard | 34' | Gray black SILT, some fine to coarse gravel, cobbles | 8 | 24' | 12' | |
| | 23 | | | 20 | | | | | | | | | |
| | 25 | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 57'
 Rock Coring _____
 Samples 12

HOLE NO. 42

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 42

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|--------------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. p.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | a.m. p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From- To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 45 | 9 | 40'-42' | D | 20 | 11 | 16 | Wet dense | 43' | Gray fine SAND, trace of silt | 9 | 24' | 18" | |
| | 12 | | | 25 | | | | | | | | | |
| | 24 | | | | | | | | | | | | |
| | 60 | | | | | | | | | | | | |
| | 75 | | | | | | | | | | | | |
| 50 | 40 | 45'-47' | D | 63 | 65 | 31 | Wet very dense | | Brown fine to coarse SAND and fine to medium Gravel, some silt | 10 | 24' | 24" | |
| | 30 | | | 34 | | | | | | | | | |
| | 44 | | | | | | | | | | | | |
| | 46 | | | | | | | | | | | | |
| 55 | 17 | 50'-52' | D | 3 | 12 | 24 | " | | Brown gray fine to coarse SAND & fine to medium gravel, some silt | 11 | 24' | 6" | |
| | 22 | | | 29 | | | | | | | | | |
| | 34 | | | | | | | | | | | | |
| | 41 | | | | | | | | | | | | |
| 60 | 36 | 55'-57' | D | 31 | 21 | 20 | Wet dense | 57' | Gray fine to coarse SAND & Gravel, some silt Bottom of Boring 57'0" | 12 | 24' | 12" | |
| | | | | 22 | | | | | | | | | |
| | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 42

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

DATE _____

HOLE NO. 43

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.0

TO Haley & Aldrich, Inc.
 PROJECT NAME Tank Site (Prov. Gas Co.)
 REPORT SENT TO above
 SAMPLES SENT TO "

ADDRESS Cambridge, Mass.
 LOCATION Providence, R.I.
 PROJ. NO. 2663
 OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | | RODS-"AW" | CASING | SAMPLER | CORE BAR. | START | COMPLETE | TOTAL HRS. | BORING FOREMAN | INSPECTOR | SOILS ENGR. |
|---------------------------|-----------------------|-------|--|-------------------|-------------|---------------|-----------|-----------------|-----------------|------------|-----------------|-----------|-------------|
| At <u>9'</u> | after _____ | Hours | | Type _____ | | <u>S/S</u> | | <u>10/12/71</u> | <u>10/13/71</u> | | <u>R. Faria</u> | | |
| At <u>8'</u> | after <u>3</u> | Hours | | Size I.D. _____ | <u>BX</u> | <u>1 3/8"</u> | | | | | | | |
| | <u>Casing at 80'</u> | | | Hammer Wt. _____ | <u>300#</u> | <u>140#</u> | BIT | | | | | | |
| | <u>Casing all out</u> | | | Hammer Fall _____ | <u>24"</u> | <u>30"</u> | | | | | | | |

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 5 | 6 | 0'-1' | D | 2 | 2 | | M/loose | 1'0" | Blacktop & Cinders | 1A | 12" | 10" |
| | 10 | 1'-2' | D | 5 | 6 | | Moist medium dense | | Brown fine to medium SAND, little silt, trace of fine to medium gravel, FILL | 1B | 12" | 12" |
| | 13 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 13 | | | | | | | | | | | |
| 10 | 8 | | | | | | | | | | | |
| | 8 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 5 | | | | | | | 10' | | | | |
| 15 | 2 | 10'-12' | D | 4 | 4 | 4 | Wet loose | | Gray fine to medium SAND, little silt, trace of fine gravel (fuel odor noted) FILL | 2 | 24" | 16" |
| | 2 | | | 4 | | | | | | | | |
| | 5 | | | | | | | 14' | | | | |
| | 6 | | | | | | Moist/v stiff | | Black SILT, trace of fine gravel, FILL | 3 | 18" | 12" |
| | 4 | 15'-16'6" | D | 10 | 11 | 13 | | 16'6" | | | | |
| 20 | 6 | | | | | | | | | | | |
| | 7 | 16'6"-18' | D | 12 | 12 | 15 | Moist very stiff | | Black SILT, little fine gravel | 4 | 18" | 15" |
| | 6 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 18 | 20'-22' | ST | 6 | 8 | 11 | | | | ST | 25" | 14" |
| 25 | 20 | | | | | | | | | | | |
| | 21 | 22'-24' | D | 11 | 14 | 15 | Moist hard | | Brown SILT, little fine sand | 5 | 24" | 18" |
| | 22 | | | 16 | | | | | | | | |
| | 24 | | | | | | | | | | | |
| | 19 | | | | | | | | | | | |
| 30 | 30 | | | | | | | | | | | |
| | 31 | | | | | | | | | | | |
| | 32 | | | | | | | 30' | | | | |
| | 16 | 30'-32' | D | 6 | 6 | 7 | Moist medium dense | | Gray coarse to fine SAND, some fine gravel, trace of silt | 6 | 24" | 19" |
| | 22 | | | 8 | | | | | | | | |
| 35 | 24 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | |
| | 26 | | | | | | | 35' | | | | |
| | 18 | 35'-37' | D | 10 | 14 | 10 | Moist medium dense | | Black coarse to fine SAND, some medium to fine gravel, trace of silt (oil odor noted) | 7 | 24" | 14" |
| | 24 | | | 10 | | | | | | | | |
| 40 | 27 | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff
 30+ Hard

SUMMARY:
 Earth Boring 82'
 Rock Coring _____
 Samples 16

HOLE NO. 43

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 43

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|---|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 45 | 20 | 40'-42' | D | 4 | 7 | 10 | Wet medium dense | 45' | Brown fine SAND & Silt | 8 | 24' | 20' |
| | 28 | | | 12 | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 32 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| 50 | 24 | 45'-47' | D | 5 | 10 | 11 | Wet medium dense | 70' | Brown fine SAND, some silt | 9 | 24' | 18' |
| | 28 | | | 11 | | | | | | | | |
| | 32 | | | | | | | | | | | |
| | 34 | | | | | | | | | | | |
| 55 | 30 | 50'-52' | D | 4 | 7 | 10 | " | 70' | | 10 | 24' | 19' |
| | 42 | | | 10 | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 56 | | | | | | | | | | | |
| 60 | 58 | 55'-57' | D | 3 | 4 | 6 | " | 70' | | 11 | 24' | 18' |
| | 54 | | | 7 | | | | | | | | |
| | 57 | (Used 309 lb. & 140 lb. to drive casing 55' to 70') | | | | | | | | | | |
| | 70 | | | | | | | | | | | |
| 65 | 38 | 60'-62' | D | 3 | 4 | 5 | " | 70' | | 12 | 24' | 20' |
| | 52 | | | 5 | | | | | | | | |
| | 56 | | | | | | | | | | | |
| | 62 | | | | | | | | | | | |
| | 68 | | | | | | | | | | | |
| 70 | 57 | 65'-67' | D | 4 | 6 | 6 | " | 70' | | 13 | 24' | 16' |
| | 52 | | | 7 | | | | | | | | |
| | 55 | | | | | | | | | | | |
| | 45 | | | | | | | | | | | |
| 75 | 33 | 70'-72' | D | 16 | 16 | 22 | Wet dense | 70' | Gray fine to coarse SAND, some silt & fine gravel (TILL) | 14 | 24' | 17' |
| | 56 | | | 24 | | | | | | | | |
| | 74 | | | | | | | | | | | |
| | 80 | | | | | | | | | | | |
| 80 | 60 | 75'-77' | D | 15 | 24 | 26 | " | 70' | | 15 | 24' | 19' |
| | 74 | | | 23 | | | | | | | | |
| | 92 | | | | | | | | | | | |
| | 96 | | | | | | | | | | | |
| 80 | 110 | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type

D=Dry C=Cored W=Washed

UP=Undisturbed Piston

TP=Test Pit A=Auger V=Vane Test

UT=Undisturbed Thinwall

Proportions Used

trace 0 to 10%

little 10 to 20%

some 20 to 35%

and 35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0-10 Loose

10-30 Med. Dense

30-50 Dense

50+ Very Dense

Cohesive Consistency

0-4 Soft

4-8 M/Stiff

8-15 Stiff

15-30 V-Stiff

30 + Hard

SUMMARY:

Earth Boring _____

Rock Coring _____

Samples _____

HOLE NO 43

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 2
 DATE _____
 HOLE NO. 50-A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.9

| | | | | | | | | |
|---------------------------|-------------------|---|----------------------|---------------|----------------|--------------------------------|------|------|
| GROUND WATER OBSERVATIONS | | Rods-"AW" Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | CASING _____ | SAMPLER _____ | CORE BAR _____ | Date | Time | |
| At <u>8'8"</u> | after _____ Hours | | START <u>9/29/71</u> | | | | | |
| At _____ | after _____ Hours | | | | | COMPLETE <u>9/30/71</u> | | p.m. |
| | | | | | | TOTAL HRS. _____ | | |
| | | | | | | BORING FOREMAN <u>A. Gomes</u> | | |
| | | | | | | INSPECTOR _____ | | |
| | | | | | | SOILS ENGR. _____ | | |

LOCATION OF BORING: Sasafra Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|--------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 5 | 2 | 0'-1' | D | 2 | 5 | | D/loose | 1' | Black COAL, CINDERS, FILL | 1 | 12" | 12' |
| | 5 | 1'-2' | D | 10 | 6 | | Moist medium dense | | Brown fine to medium SAND and Silt, trace of fine to coarse gravel, FILL | 1A | 12" | 12' |
| | 10 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | |
| 10 | 4 | 5'-6'6" | D | 6 | 6 | 5 | Wet medium dense | | | 2 | 18" | 10' |
| | 9 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | 8 | | | | | | | | No Recovery | - | 24" | 0' |
| 15 | 4 | 10'-12' | D | 10=12" | 4=12" | | " | | | 3 | 24" | 9' |
| | 3 | | | | | | | | | | | |
| | 7 | 12'-14' | D | 8 | 9 | 8 | | | | | | |
| | 4 | | | 5 | | | | 15' | | | | |
| | 4 | | | | | | | | | | | |
| 20 | 2 | 15'6"-17' | D | 3 | 2 | 2 | Wet soft | | Gray brown ORGANIC SILT, trace of brown peat | 4 | 18" | 14' |
| | 4 | | | | | | | 18' | | | | |
| | 6 | | | | | | | | | | | |
| | 20 | | | | | | | | | | | |
| | 24 | | | | | | | | Missed Sample | - | 24" | 0' |
| 25 | 7 | 20'-22' | D | 20=12" | 22=12" | | Wet medium dense | | Gray fine to coarse SAND, some silt, little fine to medium gravel | 5 | 24" | 20' |
| | 12 | | | | | | | | | | | |
| | 12 | | | | | | | | | | | |
| | 13 | | | | | | | | | | | |
| | 11 | 25'-27' | D | 4 | 8 | 8 | | 27' | | | | |
| 30 | 12 | | | 7 | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 16 | | | | | | | | | | | |
| | 24 | | | | | | Moist hard | | Brown SILT, little very fine sand | 6 | 24" | 11' |
| | 25 | 30'-32' | D | 11 | 14 | 24 | | 33' | | | | |
| 35 | 35 | | | 13 | | | | | | | | |
| | 47 | | | | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 70 | | | | | | | | | | | |
| | 30 | 35'-37' | D | 33 | 26 | 22 | Moist very dense | | Gray brown fine to coarse SAND & Gravel with some silt | 7 | 24" | 16' |
| 40 | 35 | | | 24 | | | | | | | | |
| | 58 | | | | | | | | | | | |
| | 88 | | | | | | | | | | | |
| 69 | | | | | | | | | | | | |

| | | | | | | | |
|---------------------------------|------------------|---|--|----------------------|--|----------------------|--|
| GROUND SURFACE TO _____ | | USED _____ | | "CASING: THEN _____ | | SUMMARY: | |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | Cohesionless Density | | Cohesive Consistency | |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | | 0-10 Loose | | 0-4 Soft 30+ Hard | |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | | 4-8 M/Stiff | | Rock Coring | |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | | 8-15 Stiff | | Samples <u>12</u> | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | | 15-30 V-Stiff | | HOLE NO <u>50-A</u> | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 50-A

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. 2562
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | |
|--|---|--|
| <p>GROUND-WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>SAMPLER _____</p> <p>CORE BAR _____</p> <p>Type _____</p> <p>Size I. D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p>START _____ a.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|--------|----------|------------------------------|--|---|--------|------|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| 45 | 30 | 40'-42' | D | 27 | 28 | 26 | Moist very dense | Gray brown fine to coarse SAND & Gravel with some silt | 8 | 24' | 10' | |
| | 35 | | | 25 | | | | | | | | |
| | 58 | | | | | | | | | | | |
| | 84 | | | | | | | | | | | |
| | 69 | | | | | | | | | | | |
| 50 | 24 | 45'-47' | D | 20 | 30 | 24 | " | | 9 | 24' | 11' | |
| | 28 | | | 28 | | | | | | | | |
| | 45 | | | | | | | | | | | |
| | 77 | | | | | | | | | | | |
| 55 | 126 | 50'-50'9" | D | 48 | 110/3" | | " | | 10 | 9" | -- | |
| | 253 | | | | | | | | | | | |
| | 200 | | | | | | | | | | | |
| 60 | 61 | 55'5"-57'6" | D | 49 | 66 | 49 | 140# O. E. | | 11 | 24' | -- | |
| | | | | 41 | | | | | | | | |
| 65 | | 60'-61'6" | D | 49 | 43 | 68 | 140# O. E. | Gray medium to fine SAND, little silt & gravel | 12 | 12' | -- | |
| | | 61'6"-62' | D | 92 | | | | | | 12A | 6" | -- |
| | | | | | | | | Bottom of Boring 62'0" | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | | HOLE NO. <u>50-A</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 51

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | |
|--|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR.</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date _____ Time _____</p> <p>START _____ a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____</p> |
|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|------------------------|---|--------|-----|-----|--|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Re. | | |
| 45 | 22 | 40'-42' | D | 31 | 35 | 40 | Moist very dense | 45' | Brown fine to coarse SAND, some silt & fine to coarse gravel | 8 | 24" | 9" | | |
| | 58 | | | 31 | | | | | | | | | | |
| | 75 | | | | | | | | | | | | | |
| | 156 | | | | | | | | | | | | | |
| | 127 | | | | | | | | | | | | | |
| 50 | 34 | 45'-47' | D | 28 | 17 | 19 | Wet dense | 48' | Brown fine SAND, trace of fine gravel & silt | 9 | 24" | 16" | | |
| | 24 | | | 17 | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | |
| | 47 | | | | | | | | | | | | | |
| 55 | 68 | | | | | | Wet very dense | 140# O.E. 67' | Brown fine to coarse SAND & fine to medium gravel with some silt | 10 | 24" | 31" | | |
| | 42 | 50'-52' | D | 48 | 22 | 23 | | | | | | | | |
| | 50 | | | 25 | | | | | | | | | | |
| | 106 | | | | | | | | | | | | | |
| 60 | 87 | | | | | | " | " | " | 11 | 24" | 9" | | |
| | 42 | 55'-57' | D | 31 | 33 | 53 | | | | | | | | |
| | 90 | | | 80 | | | | | | | | | | |
| | 99 | | | | | | | | | | | | | |
| 65 | 59 | | | | | | " | " | " | 12 | 24" | 10" | | |
| | 77 | | | | | | | | | | | | | |
| | | 60'-62' | D | 38 | 46 | 66 | | | | | | | | |
| 70 | | | | | | | " | " | " | 13 | 24" | -- | | |
| | | 65'-67' | D | 55 | 47 | 42 | | | | | | | | |
| | | | | 40 | | | | | | | | | | |
| | | | | | | | | Bottom of Boring 67'0" | | | | | | |

| | | | |
|--|--|--|--|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>"CASING: THEN _____</p> <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> <p style="text-align: right;">HOLE NO. <u>51</u></p> |
|--|--|--|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO Above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 1
 DATE _____
 HOLE NO. 51-A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 10.4

| GROUND WATER OBSERVATIONS | | | | Rods - "AW" | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|--|-------------|---------------|---------------|-----------|----------------|-----------------|
| At _____ | after _____ | Hours | | Type | | | | START | <u>10/7/71</u> |
| Not Indicated | | | | Size I.D. | <u>2 1/2"</u> | <u>S/S</u> | | COMPLETE | <u>10/7/71</u> |
| At _____ | after _____ | Hours | | Hammer Wt. | <u>300#</u> | <u>1 3/8"</u> | | TOTAL HRS. | |
| | | | | Hammer Fall | <u>24"</u> | <u>140#</u> | BIT | BORING FOREMAN | <u>A. Gomes</u> |
| | | | | | | <u>30"</u> | | INSPECTOR | |
| | | | | | | | | SOILS ENGR. | |

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 5 | | | | | | | | | Drove 15' of 2 1/2" Casing No Blow Counts Washed out & found organic material at 13' No samples required to top of organic | | | |
| 10 | | | | | | | | 13' | | | | |
| 15 | | 15'-17' | D | 2 | 1 | 1 | Moist soft | 19' | Dark gray sandy ORGANIC SILT | 1 | 24" | 10 |
| 20 | | 19'-21' | D | 23 | 27 | 30 | Moist/v dense | 21' | Gray fine to coarse SAND & F-M gravel with some silt | 2 | 24" | 13 |
| 25 | | | | | | | | | Bottom of Boring 21'0" | | | |

| | | | |
|--|---|---|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50 + Very Dense 15-30 V-Stiff | Earth Boring <u>21'</u> Rock Coring _____ Samples <u>2</u> |

HOLE NO 51-A

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

DATE _____

HOLE NO. 52

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.0

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Tank Site (Prov. Gas Co.)

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. 2663

SAMPLES SENT TO "

OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|----------------------|------------------------|------------------------|---------------|-------------|-----------|--------------------------------|------|
| At <u>9'</u> | after <u>0</u> Hours | Type <u>Rods-"AW"</u> | Size I.D. <u>S/S</u> | <u>S/S</u> | | | START <u>10/4/71</u> | |
| At _____ | after _____ Hours | Hammer Wt. <u>300#</u> | Hammer Fall <u>24"</u> | <u>1 3/8"</u> | <u>140#</u> | BIT | COMPLETE <u>10/6/71</u> | |
| | | | | | | | TOTAL HRS. _____ | |
| | | | | | | | BORING FOREMAN <u>A. Gomes</u> | |
| | | | | | | | INSPECTOR _____ | |
| | | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING: Sassafras Point

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Re | |
| 5 | 1 | 0'-2' | D | 4 | 4 | 6 | Moist medium dense | 3' | Brown fine to medium SAND, trace of F-C gravel, cinders & concrete, FILL | 1 | 24" | 4" | |
| | 5 | | | 9 | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| 10 | 19 | 5'-7' | D | 10 | 11 | 12 | Moist medium dense | 25' | Brown fine to coarse SAND, trace of fine to medium gravel & silt | 2 | 24" | 10" | |
| | 25 | | | 15 | | | | | | | | | |
| | 25 | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| 15 | 4 | 10'-12' | D | 14 | 11 | 7 | " | 25' | Brown fine to coarse SAND & fine to medium gravel with some silt | 3 | 24" | 10" | |
| | 15 | | | 8 | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | |
| 20 | 8 | 15'-17' | D | 10 | 18 | 17 | Wet dense | 25' | | 4 | 24" | 11" | |
| | 21 | | | 21 | | | | | | | | | |
| | 26 | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | |
| 25 | 23 | 20'-22' | D | 23 | 21 | 20 | " | 27' | Brown fine to coarse SAND, tr. fine gravel & silt | 5 | 24" | 12" | |
| | 26 | | | 13 | | | | | | | | | |
| | 28 | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | |
| 30 | 14 | 25'-27' | D | 14 | 19 | 20 | Wet dense | 39' | Gray fine to medium SAND & fine to medium gravel, trace of silt | 6 | 24" | 10" | |
| | 28 | | | 14 | | | | | | | | | |
| | 15 | 27'-29' | D | 9 | 7 | 6 | Wet medium dense | | | | | | |
| | 10 | | | 5 | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| 35 | 17 | 30'-32' | D | 10 | 11 | 12 | " | | | 7 | 24" | 4" | |
| | 14 | | | 12 | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | |
| 40 | 34 | 35'-37' | D | 16 | 14 | 22 | Wet dense | | | 8 | 24" | 10" | |
| | 24 | | | 22 | | | | | | | | | |
| | 22 | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 82'
 Rock Coring _____
 Samples 18

HOLE NO. 52

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3
 DATE _____
 HOLE NO. 52
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | | | | |
|---|--|---------------------------------|--------------------------------------|-----------------------|---|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | CASING _____ Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | SAMPLER _____ _____ _____ | CORE BAR _____ _____ BIT _____ | Date _____ Time _____ | START _____ o.p. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|--|---------------------------------|--------------------------------------|-----------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|-------|-----------|------------------------------|---------------------|---|--------|------|------|
| | | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen. | Rec. |
| 45 | 21 | 40'-42' | D | 16 | 18 | 18 | Wet dense | | Brown gray fine to coarse SAND & fine to medium gravel with some silt (Petroleum Odor Noted) | 10 | 24' | 10' |
| | 34 | | | 19 | | | | | | | | |
| | 50 | | | | | | | | | | | |
| | 49 | | | | | | | | | | | |
| 50 | 34 | 45'-47' | D | 61 | 46 | 30 | Wet very dense | | | 11 | 24' | 12' |
| | 50 | | | 45 | | | | | | | | |
| | 65 | | | | | | | | | | | |
| | 60 | | | | | | | | | | | |
| 55 | 44 | 50'-52' | D | 31 | 43 | 32 | " | | | 12 | 24' | 9' |
| | 45 | | | 41 | | | | | | | | |
| | 46 | | | | | | | | | | | |
| | 60 | | | | | | | | | | | |
| 60 | 47 | 55'-57' | D | 15 | 19 | 22 | Wet hard | 55' | Gray SILT & fine Sand, trace of gravel | 13 | 24' | 11'' |
| | 43 | | | 23 | | | | | | | | |
| | 45 | | | | | | | | | | | |
| | 59 | | | | | | | | | | | |
| 65 | 47 | 60'-62' | D | 21 | 25 | 25 | Wet hard | 58' | Gray SILT with some fine sand | 14 | 24' | 10'' |
| | 38 | | | 30 | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 60 | | | | | | | | | | | |
| 70 | 60 | 65'-67' | D | 19 | 22 | 34 | " | 69' | | 15 | 24' | 9'' |
| | 65 | | | 37 | | | | | | | | |
| | 73 | | | | | | | | | | | |
| | 94 | | | | | | | | | | | |
| 75 | 92 | 70'-72' | D | 5 | 12 | 13 | Wet dense | 74'6" | Gray fine sandy SILT | 16 | 24' | 13'' |
| | 60 | | | 19 | | | | | | | | |
| | 62 | | | | | | | | | | | |
| | 72 | | | | | | | | | | | |
| 80 | 90 | 75'-77' | D | 27 | 14 | 21 | Wet dense | | Gray silty fine to coarse SAND, some fine to medium gravel | 17 | 24' | 13'' |
| | 59 | | | 27 | | | | | | | | |
| | 56 | | | | | | | | | | | |
| | 80 | | | | | | | | | | | |
| 80 | 117 | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50 + Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 52

American Drilling & Boring Co., Inc.

1000 WATER STREET EAST PROVIDENCE, R.I.

SHEET 1 OF 3

DATE _____

HOLE NO. 53

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.3

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Tank Site (Prov. Gas Co.)

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. 2663

SAMPLES SENT TO "

OUR JOB NO. 71-396

| | | | | | | |
|----------------------------|-------------|--------|---------|----------|--------------------------|------|
| GROUND WATER OBSERVATIONS: | | CASING | SAMPLER | CORE BAR | Date | Time |
| At 10' after 18 Hours | Rods-"AW" | | S/S | | START 10/5/71 | o.m. |
| 80' Casing | Type | BW | 1 3/8" | | COMPLETE 10/6/71 | p.m. |
| At 10' after 1 1/2 Hours | Size I.D. | 300# | 140# | | TOTAL HRS | o.m. |
| No Casing | Hammer Wt. | 24" | 30" | BIT | BORING FOREMAN A. Cortez | p.m. |
| | Hammer Fall | | | | INSPECTOR | |
| | | | | | SOILS ENGR. | |

LOCATION OF BORING: Sasafra Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION: Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|--|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 4 | | 0'-2' | D | 4 | 10 | 20 | Dry dense | | Black CINDERS, Brown fine to medium SAND & Gravel, FILL | 1 | 24" | 14" |
| 18 | | | | 20 | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 17 | | | | | | | | 5' | | | | |
| 14 | | 5'-7' | D | 8 | 11 | 9 | Dry/m dense | | Brown fine to medium SAND & Gravel, trace of silt | 2 | 24" | 24" |
| 16 | | | | 11 | | | | | | | | |
| 18 | | | | | | | | 8' | | | | |
| 11 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 9 | | 10'-12' | D | 6 | 5 | 4 | Wet loose | | Brown fine to coarse SAND, some silt, little fine to medium gravel | 3 | 24" | 16" |
| 11 | | | | 4 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 15 | | | | | | | | 15' | | | | |
| 8 | | 15'-17' | D | 6 | 8 | 6 | Wet medium dense | | Brown fine to coarse SAND, some silt & fine to medium gravel | 4 | 24" | 10" |
| 12 | | | | 12 | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 13 | | 20'-22' | D | 14 | 11 | 12 | " | | | 5 | 24" | 12" |
| 20 | | | | 14 | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 24 | | | | | | | | 25' | | | | |
| 17 | | 25'-27' | D | 5 | 14 | 19 | Wet dense | | Brown fine to coarse SAND & Silt, some fine gravel | 6 | 24" | 18" |
| 26 | | | | 15 | | | | | | | | |
| 41 | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 22 | | 30'-32' | D | 9 | 11 | 15 | " | | | 7 | 24" | 22" |
| 36 | | | | 16 | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | |
| 35 | | | | | | | | 34' | | | | |
| 71 | | | | | | | | | | | | |
| 31 | | 35'-37' | D | 30 | 35 | 36 | Wet very dense | | Black gray fine to medium SAND, some silt & fine gravel, cobbles | 8 | 24" | 10" |
| 57 | | | | 39 | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff
 30+ Hard

SUMMARY:
 Earth Boring 82'
 Rock Coring 17'
 Samples

HOLE NO 53

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 11/16/71
 HOLE NO. 60
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

TO HALEY & Aldrich INC. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken At Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | Date | Time |
|-------------------------------------|-------------------|------------------------------|---------------|----------|------------------------------|------|
| At <u>9'</u> after <u>1/2</u> Hours | | Type Rods - <u>"AW"</u> | <u>S/S</u> | | START <u>11/16/71</u> | |
| | <u>50'</u> Casing | Size I.D. <u>4" + 2 1/2"</u> | <u>1 3/8"</u> | | COMPLETE _____ | |
| At _____ after _____ Hours | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT | TOTAL MRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>Cortez</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|-----------------------------|---------------------|---|--------|-----|------|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Ret. | |
| | | Probe 5' | | | | | | | | | | | |
| 11 | | 5'-6'6" | D | 3 | 2 | 3 | Wet Loose | | | 1 | 18' | 10' | |
| 34 | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 11 | | 10'-11'6" | D | 5 | 5 | 4 | " " | | | 2 | 10' | 8' | |
| 10 | | | | | | | | | | | | | |
| 9 | | | | | | | | 13' | | | | | |
| 3 | | | | | | | | | | | | | |
| W/H | | | | | | | | | | | | | |
| 4 | | 15'-16'6" | D | 1 | 1 | 1 | | 16' | Lost Sample Gray Fine To Med. SAND, in Wash - Fill - | | | | |
| 6 | | | | | | | | | | | | | |
| 5 | | 16'6"-20' | D | 1 | 2 | 1 | Wet Soft | | Gray Brown Org. Silt, with Fine Sand | 3 | 40' | 40' | |
| 6 | | | 1 | 3 | 3 | 3 | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 22 | | 20'-22' | UT | Press | | | | | | UT- | 1 | 24' | 10' |
| 17 | | | | | | | | | | | | | |
| 17 | | 22'6"-24' | 6" | UP Press | | | | | | UP- | 1 | 24' | 80' |
| 18 | | | | | | | | | | | | | |
| 22 | | 24'6"-26' | D | 1 | 1 | 1 | | | Gray Org. SILT, Traces to Little Peat | 4 | 15' | 15' | |
| 29 | | | | | | | | | | | | | |
| 20 | | 27'-29' | UP | Pressed | | | | | | UP- | 2 | 15' | 20' |
| 21 | | | | | | | | | | | | | |
| 23 | | 29'-30'6" | D | 2 | 2 | 2 | | | | 5 | 18' | 10' | |
| 24 | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | |
| 33 | | | | | | | | 35' | | | | | |
| 41 | | 35'-36'6" | D | 8 | 7 | 9 | Wet | | Gray Coarse to Med. SAND, Fine to Med. Gravel, Little Silt | 6 | 18' | 10' | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | |
| 106 | | | | | | | | | | | | | |

| | | | | |
|---------------------------------|------------------|---|----------------------|---------------------------|
| GROUND SURFACE TO _____ | | USED _____ | "CASING: _____ | THEN _____ |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | SUMMARY |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Cohesive Consistency | Earth Boring <u>52'6"</u> |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | 0-4 Soft 30 + Hard | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | 4-8 M/Stiff | Samples <u>10</u> |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | 8-15 Stiff | |
| | | 50 + Very Dense | 15-30 V-Stiff | |
| | | | | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 60

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|-------------------|---------|-----------|------------------------------|-------|
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ |
| | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN <u>Cortez</u> | _____ |
| | | | | | INSPECTOR _____ | _____ |
| | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|-------|-----------|------------------------------|---------------------|---|--------|------|-----|
| | | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen. | Re. |
| | 28 | 40'-41'6" | D | 18 | 18 | 15 | Wet Dense | | Gray Med. to Fine Sand, Fine gravel, Little Silt, Cobbles | 7 | 18" | 11 |
| | 33 | | | | | | | | | | | |
| | 31 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | |
| | 33 | | | | | | | | | | | |
| | 30 | 45'-46'6" | D | 9 | 11 | 13 | Moist Dense | | | 8 | 18" | 11 |
| | 31 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | |
| | 29 | | | | | | | | | | | |
| | | 49'-50'6" | D | 13 | 10 | 9 | | | | 9 | 18" | 11 |
| | | | | | | | | | | | | |
| | | 50'6"-52'6" | D | 8 | 8 | 7 | | 52'6" | | 10 | 24" | 8 |
| | | | | | | | | | | | | |
| | | | | | | | | | Bottom of Boring at 52'6" | | | |
| | | | | | | | | | 0'-40' Used 4" Casing | | | |
| | | | | | | | | | 40'-50' 2½" Casing | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwall | Proportions Used Trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| TOWN PRESS - EAST PROV. | | | HOLE NO. <u>60</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE 11/15/71

HOLE NO. 61

LINE & STA. _____

OFFSET _____

SURF. ELEV. 7.5'

TO Haley & Aldrich Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence, Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|------------------------|---------------|-----------|-----------------------------|-------------------|
| At <u>6'-8'</u> | after _____ Hours | Type <u>RODS-"AW"</u> | <u>S/S</u> | _____ | START <u>11/15/71</u> | <u>_____</u> a.m. |
| At _____ | after _____ Hours | Size I.D. <u>H+BW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>11/17/71</u> | <u>_____</u> p.m. |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>Gomes</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|-----------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 7 | | 0'-1'6" | D | 4 | 5 | 6 | Moist Loose | | Black Cinders & Ashes, Fill | 1 | 18' | 11" |
| 7 | | | | | | | | 3' | | | | |
| 8 | | | | | | | Moist | | Brown Peat Mixed with Sand, Cinders, Fill | | | |
| 5 | | | | | | | | 8' | | | | |
| 6 | | | | | | | | | | | | |
| 3 | | 5'-6'6" | D | 2 | 1 | 1 | | | | 2 | 18' | 9" |
| 4 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | | | Loose Wet | | Fine to Med. SAND, Few Small Gravel, Trace Silt | | | |
| 7 | | | | | | | | | | | | |
| 9 | | 10'-11'6" | D | 8 | 6 | 4 | | | | 3 | 18' | 6" |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | -Fill- | | | |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 27 | | 15'-16' | D | 10 | 4 | | | 16' | | 4 | 18' | 6" |
| 13 | | 16'-16'6" | D | 3 | | | | | Organic Silt | 4A | 6" | 4" |
| 13 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 20 | | 19'-21' | S | | | | | 21' | Pressed 2" Shelby No Rec. | | | |
| 26 | | | | | | | | | Med. Comp. Gr. Gravel, Med. to Fine Sand, Silt, Shells | | | |
| 32 | | 21'-23' | D | 13 | 19 | 10 | Moist M.D. | | | 5 | 24' | 10" |
| 27 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 90 | | 25'-26'6" | D | 18 | 14 | 10 | | | | 6 | 18' | 8" |
| 121 | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | |
| 97 | | | | | | | | | | | | |
| 20 | | 30'-31'6" | D | 30 | 28 | 24 | | | Boulders Fragments | 7 | 18' | 6" |
| 62 | | 31'6"-33' | D | 17 | 21 | 29 | | | Brown Gravel, Coarse to Fine Sand, Silt | 8 | 18' | 10" |
| 80 | | | | | | | | | | | | |
| 76 | | | | | | | | | | | | |
| 104 | | | | | | | | | | | | |
| 47 | | 35'-36'6" | D | 20 | 27 | 33 | | | | 9 | 18' | 10" |
| 63 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |

GROUND SURFACE TO 46'6" USE 30" H CASING: THEN 45'-50"

| | | | | | |
|--|---|--|--|-----------|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | 30 + Hard | SUMMARY: Earth Boring <u>46'6"</u> Rock Coring <u>0</u> Samples <u>11</u> |
|--|---|--|--|-----------|--|

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 61

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| | | |
|---|---|--|
| <p>GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>SAMPLER _____</p> <p>CORE BAR _____</p> <p>BIT _____</p> | <p style="text-align: right;">Date _____ Time _____</p> <p>START _____ a.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 11 | | 40'-41'6" | D | 10 | 24 | 29 | Moist Dense | | Brown Gravel, Coarse to Fine Sand, Trace, Silt | 10 | 18 | 10 |
| 28 | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| | | 45'-46'6" | D | 17 | 20 | 26 | | 46'6" | Bottom of Boring at 46'6" | 11 | 19 | 11 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | |
|--|--|--|---|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>"CASING: THEN _____</p> <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50 + Very Dense 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> <p style="text-align: right;">HOLE NO. 61</p> |
|--|--|--|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

SHEET 1 OF 3
 DATE 10/8/71
 HOLE NO. 62
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|-----------------------------------|------------------------------|---------------|-----------------------------|-----------|-------|-------|
| At <u>8'-9'</u> after _____ Hours | Type RODS - <u>"AW"</u> | <u>S/S</u> | START <u>11/8/71</u> | _____ | _____ | _____ |
| At _____ after _____ Hours | Size I.D. <u>4" H-2 1/2"</u> | <u>1 3/8"</u> | COMPLETE <u>11/15/71</u> | _____ | _____ | _____ |
| | Hammer Wt. <u>300#</u> | <u>140#</u> | TOTAL HRS. _____ | _____ | _____ | _____ |
| | Hammer Fall <u>24"</u> | <u>30"</u> | BORING FOREMAN <u>Gomes</u> | _____ | _____ | _____ |
| | | | INSPECTOR _____ | _____ | _____ | _____ |
| | | | SOILS ENGR. _____ | _____ | _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | | | | | | | | | Probed For Utilities From 0'-5' | | | |
| 12 | | 5'-6'6" | D | 4 | 5 | 5 | Moist Loose | 5' | Black Cinders | 1 | 18' | 10' |
| 17 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 19 | | 10'-11'6" | D | 12 | 10 | 8 | " " | | Fill | 2 | 18' | |
| 27 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 19 | | 15'-16'6" | D | 5 | 3 | 3 | " " | 16'6" | No Rec. | | | |
| 5 | | | | | | | | | | | | |
| 7 | | 16'6"-18' | D | 3 | 2 | 2 | | | Organic Silt | 3 | 18' | 10' |
| 11 | | | | | | | | | | | | |
| 19 | | 18'-20' | | | | | | 20'6" | Tube 2" Shelby- 23" Rec. | | | |
| 18 | | | | | | | | | | | | |
| 26 | | | | | | | | | Tried Piston 21'-23', No Penetration | | | |
| 26 | | 21'-23' | D | 10 | 8 | 8 | | | Fine Med. Gravel, Sand, Trace Silt | 4 | 24' | 9" |
| 24 | | | | 7 | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 41 | | 25'-26'6" | D | 18 | 17 | 8 | | 27' | | 5 | 18' | 14' |
| 38 | | | | | | | | | | | | |
| 19 | | 26'6"-28'6" | D | 11 | 3 | 3 | | | Sandy Silt | 6 | 24' | 14' |
| 18 | | | | 3 | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 40 | | 30'-32' | | | | | | | Shelby Missed | | | |
| 27 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 38 | | 32'-34' | PUSHED | | | | | | No. Rec. | | | |
| 30 | | | | | | | | | | | | |
| | | 35'-36'6" | D | 1 | 1 | 2 | | | Soft Gr. Organic Silt | 7 | 18' | 12' |
| | | | | | | | | | | | | |
| | | 38'-39'3" | | | | | | | Piston 16" Rec. | | | |

| | | | | | | | |
|---------------------------------|------------------|---|--|----------------------|--|----------------------|--|
| GROUND SURFACE TO _____ | | USED _____ | | "CASING: THEN _____ | | SUMMARY: | |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | Cohesionless Density | | Cohesive Consistency | |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 Loose | | 0-4 Soft | | 30 + Hard | |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | | 4-8 M/Stiff | | Earth Boring 17 | |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | | 8-15 Stiff | | Rock Coring | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | | 15-30 V-Stiff | | Samples 22 | |
| TOWN PRESS - EAST PROV. | | | | | | HOLE NO. 62 | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 62

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time | |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ | g.m. |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ | p.m. |
| | | | | | BIT _____ | INSPECTOR _____ | _____ | |
| | | | | | | SOILS ENGR. _____ | _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | 39'6"-41' | D | 3 | 4 | 4 | Soft Moist | | Gr. Organic Silt, Tr. Peat Fibers | 8 | 13" | 14 |
| | | 43'-45' | UP | | | | | 45' | 3" Piston 22" Rec. | | | |
| | | 45'-46'6" | D | 5 | 9 | 8 | Moist Soft | 48' | Med. Gr. Silt Sand, Trace Med. Sand, Tr. Org. | 9 | 13" | 14" |
| | | 50'-51'6" | D | 8 | 10 | 13 | Med. Dense | | Silty Sand, Yellow Gray Mottled Clay Lenses | 10 | 13" | 17" |
| | | 55'-56'6" | D | 18 | 14 | 12 | | | | 11 | 13" | 14" |
| | | 60'-61'6" | D | 16 | 12 | 14 | | | | 12 | 13" | 10" |
| | | 65'-66'6" | D | 29 | 24 | 28 | | 67'6" | | 13 | 16" | 21" |
| | | 70'-71'6" | D | 13 | 20 | 14 | Moist M.D. | | Compact Gr. Silty, Fine Sand | 14 | 15" | 12" |
| | | 75'-76'6" | D | 16 | 14 | 14 | | 78' | | 15 | 15" | 12" |
| | | | | | | | Moist Med. D. | | 2" 5" Running Sand @ 80' Med. Comp. Gr. Fine Sand | | | |

Casing

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | CASING: _____ | THEN _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| TOWN PRESS - EAST PROV. | | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | | HOLE NO. <u>62</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 62

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | BIT _____ | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|-------------------------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | 38 | 89'-82' | D | 6 | 7 | 12 | Moist M.D. | Med. Comp. Gr. Fine Sand | 16 | 24" | 16" | |
| | 32 | | | 14 | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 38 | 85'-87' | D | 6 | 6 | 7 | | | 17 | 24" | 15" | |
| | 42 | | | 6 | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 53 | | | | | | | | | | | |
| | 68 | | | | | | | | | | | |
| | 60 | 90'-91'6" | D | 6 | 8 | 10 | | | 18 | 18" | 12" | |
| | 68 | | | | | | | | | | | |
| | 140 | | | | | | | | | | | |
| | 160 | | | | | | | | | | | |
| | 181 | | | | | | | | | | | |
| #450 | 32 | 95'-97' | D | 5 | 5 | 8 | | | 19 | 24" | 14" | |
| | 61 | | | 9 | | | | | | | | |
| | 68 | | | | | | | | | | | |
| | 96 | | | | | | | | | | | |
| | 124 | | | | | | | | | | | |
| | 126 | 100'-102' | D | 19 | 12 | 11 | 103' | | 20 | 24" | 10" | |
| | 140 | | | 12 | | | | | | | | |
| | 140 | | | | | | | | | | | |
| | 151 | | | | | | | | | | | |
| | 163 | | | | | | | | | | | |
| | 64 | 105'-107' | D | 20 | 18 | 20 | | Comp. Gr. Sand Trace Silt | 21 | 24" | 18" | |
| | 82 | | | 14 | | | | | | | | |
| | 84 | | | | | | | | | | | |
| | 93 | | | | | | | | | | | |
| | 107 | | | | | | | | | | | |
| | 70 | 110'-112' | D | 12 | 12 | 8 | 117' | No Rec. Bottom of Boring at 117' | 22 | 24" | 16" | |
| | 86 | | | 7 | | | | | | | | |
| | 94 | 115'-117' | D | 20 | 20 | 21 | | | | | | |
| | 112 | | | 24 | | | | | | | | |
| | 99 | | | | | | | | | | | |

GROUND SURFACE TO 45'-Oil 48"

USED 115'-21" CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

30+ Hard

SUMMARY:
 Earth Boring 117'
 Rock Coring 0
 Samples 22

HOLE NO. 62

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 4
 DATE 11/8/71
 HOLE NO. 63
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------------|------------------------|---------------|---------|-----------|----------------------------------|-------------------|
| At <u>8'</u> | after <u>16</u> Hours | Type <u>RODS-"AW"</u> | <u>S/S</u> | | | START <u>11/8/71</u> | <u>_____</u> a.m. |
| | <u>20'</u> Casing | Size I.D. <u>H+BWF</u> | <u>1 3/8"</u> | | | COMPLETE <u>11/12/71</u> | <u>_____</u> p.m. |
| At _____ | after _____ Hours | Hammer Wt. <u>300#</u> | <u>140#</u> | | | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | | | BORING FOREMAN <u>R. Andrews</u> | |
| | | | | | | INSPECTOR <u>R. Urcum</u> | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|------|-------|------------------------------|-----------------------------|---|--------|-----|-----|
| | | | | From | To | | | | | No. | Pen | Rec |
| | | | | 0-6 | 6-12 | 12-18 | | | | | | |
| 4 | | | | | | | | Black Ash & Fine Sand, Fill | | | | |
| 6 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 12 | | 5'-6'6" | D | 7 | 8 | 8 | | | | 1 | 18" | 14' |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | 10'-12'6" | D | 4 | 3 | | | | | 2 | 30' | 6" |
| 14 | | | | 2 | 3 | | | | | | | |
| 14 | | | | 4 | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 16 | | 15'-17' | D | 10 | 8 | | | | | 3 | 24' | 10" |
| 17 | | | | 4 | 4 | | | | | | | |
| 8 | | | | | | | | 17'6" | | | | |
| 6 | | | | | | | | | | | | |
| 15 | | 19'-20'6" | D | 1 | 1 | 1 | H-Flush Casing | | Gray Org. Silt | 4 | 18' | 7" |
| 12 | | | | | | | | | | | | |
| 16 | | 21'-22'8" | UP | | | | | | | 1 | 20' | 17" |
| 16 | | | | | | | | | | | | |
| 15 | | 23'-24'6" | D | 1 | 2 | 2 | | | | 5 | 18" | 18" |
| 21 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 19 | | 26'-28' | UP | | | | | | | 2 | 24' | 23" |
| 19 | | | | | | | | | | | | |
| 20 | | 28'-29'6" | D | PUSH | | | | | | 6 | 18' | 17" |
| 23 | | | | | | | | 30' | | | | |
| 12 | | 31'-33' | UP | | | | | | | 3 | 24' | 24" |
| 11 | | | | | | | | | | | | |
| 13 | | 33'-34'6" | D | PUSH | | | BW-Flush Casing | | | 7 | 18' | 18" |
| 14 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | | | | | | | 39'6" | | | | |
| 17 | | | | | | | | | Gray Fine to Med. Sand | | | |

GROUND SURFACE TO 30' USED it "CASING: THEN _____

| | | | | |
|--|---|--|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>122</u> Rock Coring _____ Samples <u>25</u> |
|--|---|--|---|---|

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 4

DATE _____

HOLE NO. 63

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|----------------------------|-------------------|--------|---------|-----------|----------------------|------------|
| At _____ after _____ Hours | Type _____ | _____ | _____ | _____ | START _____ | _____ o.m. |
| At _____ after _____ Hours | Size I.D. _____ | _____ | _____ | _____ | COMPLETE _____ | _____ o.m. |
| | Hammer Wt. _____ | _____ | _____ | _____ | TOTAL HRS. _____ | _____ o.m. |
| | Hammer Fall _____ | _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | _____ | _____ | _____ | INSPECTOR _____ | |
| | | _____ | _____ | _____ | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 12 | | 40'-41'6" D | D | 4 | 5 | 5 | | 42' | Gray Fine to Med. Sand | 8 | 18" | 17" |
| 13 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | BW Flush | | | | | |
| 8 | | 45'-46'6" D | D | 1 | 1 | 1 | | | | 9 | 18" | 16" |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 10 | | | | | | | | 50' | | | | |
| 47 | | 50'-51'6" D | D | 1 | 1 | 2 | H Flush | | | 10 | 18" | 15" |
| 31 | | | | | | | | | | | | |
| 35 | | 53'-55' UP | UP | | | | | | | 4 | 24" | 22" |
| 23 | | | | | | | | | | | | |
| 20 | | | | | | | | 55' | | | | |
| W | | 55'-56'6" D | D | 1 | 1 | 1 | BW Flush | | | 11 | 18" | 14" |
| A B | | | | | | | | | | | | |
| S W/ | | | | | | | | | | | | |
| H F | | | | | | | | 59' | | | | |
| I | | | | | | | | | | | | |
| W | | 60'-61'6" D | D | 1 | 1 | 2 | BW FLUSH | | Brown Peaty Silt, Trace Fine to Med. Sand | 12 | 18" | 14" |
| a B | | | | | | | | | | | | |
| s W/ | | | | | | | | | | | | |
| h F | | | | | | | | | | | | |
| I | | | | | | | | | | | | |
| 1 | | 65'-66'6" D | D | 1 | 2 | 3 | | | Gray Brown Peaty Silt, 67' to 70' Wash Was Lite Gray | 13 | 18" | 15" |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 13 | | | | | | | | 70' | | | | |
| 21 | | 70'-71'6" D | D | 10 | 10 | 11 | | | Black Org. Silt | 14 | 18" | 10" |
| 19 | | | | | | | | | | | | |
| 21 | | | | | | | | 73' | | | | |
| 27 | | | | | | | | | Gray Fine to Coarse Sand, Some Fine Gravel, Trace Silt | | | |
| 30 | | | | | | | | | | | | |
| 16 | | 75'-76'6" D | D | 8 | 8 | 7 | | | | 15 | 18" | 12" |
| 17 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | HOLE NO <u>63</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 4

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

DATE _____
 HOLE NO. 63
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR | Date | Time | |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ | |
| | | | | | | INSPECTOR _____ | _____ | |
| | | | | | | SOILS ENGR. _____ | _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 17 | | 80'-81'6" | D | 8 | 8 | 10 | | | Gray Fine to Coarse Sand, Trace Silt, Fine Gravel | 16 | 18 | 12" |
| 19 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 19 | | 85'-86'6" | D | 9 | 12 | 12 | | | | 17 | 18 | 10" |
| 24 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 34 | | 90'-92' | D | 22 | 16 | | | 92' | Sand Ran Back 5' in Pipe | 18 | 24 | 8" |
| 29 | | | | 15 | 16 | | | | | | | |
| 29 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | |
| 32 | | 95'-97' | D | 12 | 11 | | | | Gray Fine Sand, Some Silt | 19 | 24 | 10" |
| 39 | | | | 11 | 9 | | | | | | | |
| 43 | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | |
| 27 | | 100'-102' | D | 9 | 10 | | | 103' | | 20 | 24 | 16" |
| 29 | | | | 11 | 11 | | | | | | | |
| 29 | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 47 | | 105'-107' | D | 12 | 11 | | | | Gray Fine Sand, Trace Silt | 21 | 24 | 8" |
| 33 | | | | 14 | 16 | | | | | | | |
| 41 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | |
| 71 | | 110'-112' | D | 7 | 8 | | | 112' | Missed Sample at 110' to 112' Went Back Down Hole For | | | |
| 63 | | | | 8 | 8 | | | | | | | |
| 95 | | 112'-114' | D | 12 | 11 | | | | Sampled-Sand, Ran Back 11' in Casing | 22 | 24 | 12" |
| 103 | | | | 12 | 14 | | | | | | | |
| 115 | | | | | | | | | | | | |
| 27 | | 115'-117' | D | 12 | 13 | | | | Gray Fine to Coarse Sand | 23 | 24 | 11" |
| 31 | | | | 13 | 11 | | | | | | | |
| 50 | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. <u>63</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

SHEET 1 OF 2
 DATE _____
 HOLE NO. 65
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.5

| GROUND WATER OBSERVATIONS | | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------|-------|-------------------------------|--------|---------------|-----------|----------------------------------|------------|
| At <u>13'4"</u> | after <u>72</u> | Hours | <u>Rods-"AW"</u> | | | | START <u>11/5/71</u> | <u>o.m</u> |
| <u>40' Casing</u> | | | Type _____ | | <u>S/S</u> | | COMPLETE <u>11/8/71</u> | <u>p.m</u> |
| At <u>10'3"</u> | after <u>2</u> | Hours | Size I.D. <u>HW & BWF</u> | | <u>1 3/8"</u> | | TOTAL HRS. _____ | |
| <u>30' Casing</u> | | | Hammer Wt. <u>300#</u> | | <u>140#</u> | BIT _____ | BORING FOREMAN <u>R. Andrews</u> | |
| | | | Hammer Fall <u>24"</u> | | <u>30"</u> | | INSPECTOR _____ | |
| | | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | 4 | (BWF Casing to 30' then | | | | | | | | | | |
| | 7 | BWF Casing) | | | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| 5 | 15 | | | | | | | | | | | |
| | 10 | 5'-6'6" | D | 1 | 1 | 1 | | | | 1 | 18' | 13" |
| | 12 | | | | | | | | | | | |
| | 16 | | | | | | | | | | | |
| | 17 | | | | | | | | | | | |
| 10 | 19 | | | | | | | | | | | |
| | 11 | 10'-11'6" | D | 9 | 18 | 15 | | | | 2 | 16' | 12" |
| | 34 | | | | | | | | | | | |
| | 39 | | | | | | | | | | | |
| | 40 | | | | | | | | | | | |
| 15 | 25 | | | | | | | | | | | |
| | 10 | 15'-17'6" | D | 8 | 12 | 1 | | 17' | | 3 | 30' | 14" |
| | 11 | | | 3 | 5 | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| 20 | 17 | | | | | | | | | | | |
| | 30 | 20'-21'6" | D | 10 | 10 | 9 | | 23' | Gray fine to coarse SAND, trace of fine gravel | 4 | 18' | 14" |
| | 31 | | | | | | | | | | | |
| | 35 | | | | | | | | | | | |
| | 40 | | | | | | | | | | | |
| 25 | 40 | | | | | | | | | | | |
| | 22 | 25'-26'6" | D | 8 | 10 | 14 | | | Gray fine to coarse SAND, trace of fine gravel, trace of silt | 5 | 18' | 15" |
| | 35 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| 30 | 41 | | | | | | | | (at 30' reduced hole to BWF) | | | |
| | 4 | 30'-31'6" | D | 8 | 10 | 11 | | 32' | | 6 | 18' | 6" |
| | 5 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 12 | | | | | | | | | | | |
| 35 | 22 | | | | | | | | Gray fine to medium SAND, trace of coarse sand | | | |
| | 16 | 35'-36'6" | D | 4 | 8 | 16 | | 38' | (Sand ran back 5'6" in Casing at 35') | 7 | 18' | 8" |
| | 17 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | |
| | 31 | | | | | | | | | | | |
| 40 | 44 | | | | | | | | Gray fine to coarse SAND, some silt | | | |

| | | | | |
|---------------------------------|------------------|---|----------------------|---------------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: _____ | THEN _____ | SUMMARY: _____ |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Cohesionless Density | Cohesive Consistency |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 Loose | 0-4 Soft | 30+ Hard |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | 4-8 M/Stiff | |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | 8-15 Stiff | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | 15-30 V-Stiff | |
| | | | | Earth Boring <u>40'6"</u> |
| | | | | Rock Coring _____ |
| | | | | Samples <u>9</u> |
| | | | | HOLE NO. <u>65</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 65

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-442

| | | |
|--|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR.</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date _____ Time _____</p> <p>START _____ a.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 45 | 16 | 40'-41'6" | D | 13 | 16 | 20 | | | Gray fine to coarse SAND, some silt | 8 | 18" | 14" |
| | 19 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 42 | | | | | | | 44' | | | | |
| | 43 | 45'-46'6" | D | 12 | 14 | 16 | | 46'6" | Gray fine to coarse SAND, some silt, trace of fine gravel | 9 | 18" | 10" |
| | | | | | | | | | | | | |
| 50 | | | | | | | | | Bottom of Boring 46'6" | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

| | | | |
|---|--|--|--|
| GROUND SURFACE TO _____ | USED _____ | CASING: _____ | THEN _____ |
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <p>Cohesionless Density</p> <p>0-10 Loose</p> <p>10-30 Med Dense</p> <p>30-50 Dense</p> <p>50+ Very Dense</p> | <p>Cohesive Consistency</p> <p>0-4 Soft 30+ Hard</p> <p>4-8 M/Stiff</p> <p>8-15 Stiff</p> <p>15-30 V-Stiff</p> |
| <p>SUMMARY:</p> <p>Earth Boring _____</p> <p>Rock Coring _____</p> <p>Samples _____</p> | | | <p>HOLE NO. <u>65</u></p> |

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 1 OF 1

DATE 11/15/71

HOLE NO. 66

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.5'

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Providence Gas Co.

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. _____

SAMPLES SENT TO Taken at Site

OUR JOB NO. 71-422

| | | | | |
|--|---|--|-----------------------------|--|
| <p>GROUND WATER OBSERVATIONS</p> <p>At <u>9'</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING</p> <p>Type RODs - <u>"AW"</u></p> <p>Size I.D. <u>BW</u></p> <p>Hammer Wt. <u>300#</u></p> <p>Hammer Fall <u>24"</u></p> | <p>SAMPLER</p> <p><u>S/S</u></p> <p><u>1 3/8"</u></p> <p><u>140#</u></p> <p><u>30"</u></p> | <p>CORE BAR.</p> <p>BIT</p> | <p>Date <u>11/15/71</u> Time _____</p> <p>START _____ a.m. p.m.</p> <p>COMPLETE _____ a.m. p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN <u>Corbett</u></p> <p>INSPECTOR <u>R. Jannina</u></p> <p>SOILS ENGR. _____</p> |
|--|---|--|-----------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | | Probe First 5' | | | | | | | | | | |
| 4 | | 5'-6'6" | D | 11 | 11 | 8 | Dry M.D. | | Brown Black Fine To Med. Sand Bricks, Cinders, Fill | 1 | 18' | 14' |
| 11 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 3 | | 10'-11'6" | D | 11 | 11 | 6 | | 11'6" | Lost Sample | | | |
| 4 | | | | | | | | | | | | |
| 6 | | 11'6"-13' | D | 3 | 5 | 4 | WET Loose | 15'6" | Black Med. to Fine Sand, Gravel, Bricks, Fill | 2 | 18' | 14' |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 3 | | 15'-16'6" | D | 1 | 2 | 1 | Wet Loose | 20' | Gray Med. to Coarse Sand, Trace Fine Gravel | 3 | 18' | 12' |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 3 | | 20'-21'6" | D | 5 | 4 | 5 | Wet M.D. | | Lost Sample 1' of Running Sand at 20' | - | 18' | 10' |
| 7 | | | | | | | | | | | | |
| 8 | | 21'6"-23' | D | 5 | 5 | 6 | | | Gray Coarse to Med. Sand, Trace Fine Gravel | 4 | 18' | 14' |
| 7 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 7 | | 25'-26'6" | D | 6 | 6 | 6 | | | | 5 | 18' | 14' |
| 9 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 13 | | | | | | | | 30' | | | | |
| 11 | | 30'-31'6" | D | 11 | 15 | 17 | Wet Dense | | Gray Brown Coarse to Fine Sand, Fine to Med. Gravel Little Silt | 6 | 18' | 14' |
| 26 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| | | 35'-36'6" | D | 18 | 23 | 27 | Wet V.D. | 36'6" | Bottom of Boring at 36'6" | 7 | 18' | 12' |
| | | | | | | | | | | | | |

| GROUND SURFACE TO <u>35'</u> | USED <u>BW</u> CASING: THEN <u>S/S</u> to <u>36'6"</u> | | | | | | | | | | | |
|---|--|---|----------------------|----------------------|------------|-------------------|------------------|-------------|-------------|------------|----------------|---------------|
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Cohesionless Density</th> <th>Cohesive Consistency</th> </tr> <tr> <td>0-10 Loose</td> <td>0-4 Soft 30+ Hard</td> </tr> <tr> <td>10-30 Med. Dense</td> <td>4-8 M/Stiff</td> </tr> <tr> <td>30-50 Dense</td> <td>8-15 Stiff</td> </tr> <tr> <td>50+ Very Dense</td> <td>15-30 V-Stiff</td> </tr> </table> | Cohesionless Density | Cohesive Consistency | 0-10 Loose | 0-4 Soft 30+ Hard | 10-30 Med. Dense | 4-8 M/Stiff | 30-50 Dense | 8-15 Stiff | 50+ Very Dense | 15-30 V-Stiff |
| Cohesionless Density | Cohesive Consistency | | | | | | | | | | | |
| 0-10 Loose | 0-4 Soft 30+ Hard | | | | | | | | | | | |
| 10-30 Med. Dense | 4-8 M/Stiff | | | | | | | | | | | |
| 30-50 Dense | 8-15 Stiff | | | | | | | | | | | |
| 50+ Very Dense | 15-30 V-Stiff | | | | | | | | | | | |
| | | <p>SUMMARY:</p> <p>Earth Boring <u>36'6"</u></p> <p>Rock Coring _____</p> <p>Samples <u>7</u></p> | | | | | | | | | | |
| | | <p>HOLE NO. <u>66</u></p> | | | | | | | | | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE 12/31/71

HOLE NO. 70

LINE & STA. _____

OFFSET _____

SURF. ELEV. 7.6

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Providence, Gas Co.

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | RODS - "AW" | CASING | SAMPLER | CORE BAR. | START | DATE | TIME |
|---------------------------|----------------------|------------------------------|----------|--------------|-----------|----------------------------|-----------------------------------|-------|
| At <u>9'0"</u> | after <u>0</u> Hours | Type _____ | HW _____ | S/S _____ | _____ | 12/31/71 | _____ | _____ |
| 9:40 AM - 1/3/72 with | | Size I.D. <u>4" / 2 1/2"</u> | BW _____ | 1 3/8" _____ | _____ | COMPLETE | 1/3/72 | _____ |
| 20' HW Casing | | Hammer Wt. <u>300#</u> | _____ | 140# _____ | BIT _____ | TOTAL HRS. _____ | BORING FOREMAN <u>Quagliaroli</u> | |
| At <u>5'</u> | after <u>0</u> Hours | Hammer Fall <u>24"</u> | _____ | 30" _____ | _____ | INSPECTOR <u>R. Varnum</u> | SOILS ENGR. _____ | |
| No Casing | | | | | | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---|---|----------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 10 | | | | | | | | Gray Brown Fine to Coarse SAND, Trace Fine Gravel, Trace Silt, Cinders, Fill Note: 10'-11'6" 3" Rec. On Second Attempt | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | 5'-6'6" | D | 4 | 5 | 5 | Moist Loose | | | 1 | 18" | 14" |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | 10'-11'6" | D | 4 | 2 | 2 | Wet Loose | 15'6" | 2 | 18" | 3" | |
| 11 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | 15'-16'6" | D | 4 | 1 | 1 | Wet Loose | | 3 | 18" | 12" | |
| 10 | | 16'6"-18' | D | 1 | 1 | 3 | Loose | 20' | 4 | 18" | 14" | |
| 15 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 9 | | 20'-21'6" | D | 8 | 2 | 1 | Wet Loose | | 0 | 18" | 0 | |
| 16 | | 21'6"-23' | D | 7 | 5 | 2 | | | 0 | 18" | 0 | |
| 17 | | 23'-25' | W | | | | | | 5 | Wash Sam | | |
| 19 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 8 | | 25'-26'6" | D | 12 | 13 | 12 | Wet M.D. | 30' | 6 | 18" | 4" | |
| 9 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | 30'-31'6" | D | 16 | 17 | 19 | Wet Dense | | 7 | 18" | 14" | |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 15 | | 35'-36'6" | D | 12 | 16 | 17 | Wet Dense | | 8 | 18" | 12" | |
| 26 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 42 | | 40'-41'6" | D | 42 | 24 | 27 | Wet V.D. | | 9 | 18" | 14" | |

GROUND SURFACE TO _____

USED _____ CASING: THEN _____

Sample Type

D=Dry C=Cored W=Washed
UP=Undisturbed Piston
TP=Test Pit A=Auger V=Vane Test
UT=Undisturbed Thinwall

Proportions Used

trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

140lb W/L x 30" fall on 2" O.D. Sampler
Cohesionless Density
0-10 Loose
10-30 Med. Dense
30-50 Dense
50+ Very Dense
Cohesive Consistency
0-4 Soft 30+ Hard
4-8 M/Stiff
8-15 Stiff
15-30 V-Stiff

SUMMARY:

Earth Boring 51'6"
Rock Coring _____
Samples 11

HOLE NO. _____

70

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 12/29/71
 HOLE NO. 71
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 6.6

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | Rods - "AW" CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|------------------------|---------------|-----------|-----------------------------|------|
| At <u>18'7"</u> | after <u>1/2</u> Hours | Type _____ | <u>S/S</u> | _____ | START <u>12/29/71</u> | a.m. |
| At _____ | after _____ Hours | Size I.D. <u>BW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>12/30/71</u> | p.m. |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | _____ | BORING FOREMAN <u>Gomes</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|--------|--------------|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| 1 | | | | | | | | | Probed to 5' No Samples Required | | | | |
| 2 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 9 | | | | | | | | 5' | | | | | |
| 4 | | 5'-6'6" | D | 2 | 3 | 1 | Soft | | Dark Brown Fine to Coarse SAND, Trace Fine Gravel, Cinders, Fill | 1 | 18'7" | | |
| 4 | | | | | | | | | | | | | |
| 12 | | | | | | | | 8' | | | | | |
| 19 | | | | | | | | | | | | | |
| 11 | | | | | | | | | Gray Fine Silty SAND, Little Fine Gravel, (Fuel Odor Noted) Fill | | | | |
| 5 | | 10'-11'6" | D | 12 | 23 | 11 | Moist M.D. | | | 2 | 18'10" | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | 14' | | | | | |
| 8 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 2 | | 15'-16'6" | D | 4 | 3 | 3 | Moist Soft | | Gray Fine Silty SAND, Trace Fine Gravel, Fill | 3 | 18'11" | | |
| 7 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 6 | | | | | | | | 20' | | | | | |
| 1 | | 20'6"-22'6" | | | | | | | Org. S-1 20'6"-22'6" Pressed 24"-Rec 100% | | | SHELBY 2 1/2 | |
| 1 | | | | | | | | 22' | | | | | |
| 3 | | 22'6"-24'6" | | | | | | | 22'6"-24'6" Missed | | | | |
| 2 | | | | | | | | | | | | | |
| 1 | | 24'6"-27' | | | | | | 24'6" | | | | | |
| 1 | | | | | | | | | S-2 24'6"-27' 100% Rec. | | | | |
| 1 | | | | | | | | 27' | | | | | |
| 2 | | | | | | | | | | | | | |
| 2 | | | | | | | | | Org. Silt (Gray) | | | | |
| 1 | | | | | | | | | | | | | |
| 7 | | 30'-31'6" | D | 1 | 1 | 2 | Moist Soft | | | 4 | 18" - | | |
| 9 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 17 | | | | | | | | 35' | | | | | |
| 14 | | 35'-37' | | | | | | | S-3 35'-37' 100% Rec. | | | | |
| 15 | | | | | | | | 37' | | | | | |
| 15 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 66'6"
 Rock Coring _____
 Samples 11
 HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

SHEET 1 OF 3
 DATE 12/31/71
 HOLE NO. 72
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.5

| | | | | |
|--|--|--|----------------------------------|--|
| GROUND WATER OBSERVATIONS At <u>12'9"</u> after _____ Hours At _____ after _____ Hours | Rods-"AW" Type _____ Size I.D. <u>4"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> BIT _____ <u>30"</u> | CORE BAR _____ _____ _____ | Date _____ Time _____ START <u>12/31/71</u> a.m. COMPLETE <u>1/4/72</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>Gomes</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____ |
|--|--|--|----------------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 13 | | | | | | | | | No Sample to 5' | | | |
| 19 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 66 | | 5'-6'6" | D | 2 | 2 | 1 | Moist Loose | | Dark Gray Fine to Coarse SAND & Gravel, Ashes, Cinders (Oil Soaked), Fill | 1 | 18' | 12' |
| 53 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 17 | | | | | | | " " | | | | | |
| 29 | | 10'-11'6" | D | 4 | 4 | 7 | " " | | | 2 | 18' | 9" |
| 31 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 30 | | | | | | | " " | | | | | |
| 10 | | 15'-16'6" | D | 3 | 3 | 2 | " " | | | 3 | 18' | 10" |
| 28 | | | | | | | | | | | | |
| 28 | | | | | | | | 18'6" | | | | |
| 18 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | 20'-21'6" | D | 14 | 5 | 4 | Moist Loose | 2" S-1 | Gray Org. SILT (No Rec. W/S/S) 22' - 24'6" - 30" Press Rec. 26" | | | |
| 8 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 14 | | | | | | | | 3" U.P. | -1 25' -27' - 24" Press Rec. 21 1/2" | | | |
| 23 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 14 | | 27'-28'6" | D | 1 | 1 | 2 | Moist Soft | 3" U.P. | -2 31' - 33' - 24" Press Rec. 24" | 4 | 18' | 18" |
| 16 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 29 | | 33'-34'6" | D | Press | | | | | | 5 | 18' | 18" |
| 21 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 29 | | 38'-40' | | | | | | 2" S-2 | 38' - 40' - 24" Press 100% Rec. | | | |
| 21 | | | | | | | | | | | | |

| | | | |
|---|---|---|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | _____ Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | | SUMMARY: Earth Boring <u>90'</u> Rock Coring _____ Samples <u>15</u> |
| | | | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 72

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|-------------------|---------|-----------|----------------------|------------|
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | _____ o.m. |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ p.m. |
| | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | |
| | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | BIT _____ | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 2½" | 23 | 40'-41'5" | D | Press | | | Moist Soft | | Gray Org. SILT & Shells | 6 | 18" | 18" |
| | 27 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 78 | | | | | | | | | | | |
| | 108 | 45'-47' | UP #3 | | | | | 3" 47' | Pressed 24" From 45' -47' 100% Rec. | | | |
| 4" | 124 | | | | | | | | | | | |
| | 134 | 47'-48'6" | D | 2 | 5 | 5 | Moist Stiff | | Dark Gray Peaty Org. SILT, Trace Fine SAND | 7 | 18" | 12" |
| | 136 | | | | | | | | | | | |
| | 131 | | | | | | | | | | | |
| 2½" | Red Wash | 50'-51'6" | D | 5 | 8 | 8 | Moist V. Stiff | S-3 53' | Press From 52'-53' No Rec. | 8 | 18" | 13" |
| | 18 | 52'-53' | | | | | | | | | | |
| | 22 | 53'-54'6" | D | 18 | 24 | 29 | Moist M.D. | | Gray Fine to Coarse SAND, & Fine to Coarse Gravel, Some Silt | 9 | 18" | 9" |
| | 39 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 11 | | | | | | | | | | | |
| | 13 | | | | | | | 59' | | | | |
| | 13 | | | | | | | | | | | |
| | 12 | | | | | | | | | | | |
| | 13 | 60'-61'6" | D | 9 | 11 | 13 | Moist M.D. | | Gray Fine to Coarse SAND, Little Fine Gravel, Trace Silt | 10 | 18" | - |
| 2½" | 16 | | | | | | | | | | | |
| | 19 | | | | | | | | | | | |
| | 23 | | | | | | | 64' | | | | |
| | 6 | 64'-65' | D | 2 | 1 | | Moist Loose | 65' | Gray F-C SAND, & Org. Silt, Trace Fine Gravel | 11 | 12" | 7" |
| | 7 | | | | | | | | | | | |
| | 6 | 65'-66' | D | 1 | 1 | | Moist Soft | 68' | Dark Gray Org. SILT, Trace Peat | 11A | 12" | 9" |
| | 5 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 17 | 69'-71' | D | 18 | 18 | 19 | Moist Dense | | Gray Fine to Med. SAND, & Silt, Trace Fine to Coarse Gravel | 12 | 24" | 10" |
| 2½" | 35 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| | 38 | | | | | | | 74' | | | | |
| | 45 | | | | | | | | | | | |
| | 34 | 74'-75'6" | D | 9 | 6 | 4 | Moist Loose | | Gray Fine to Coarse SAND, & Silt, Some Fine to Med. Gravel | 13 | 18" | 9" |
| | 33 | | | | | | | | | | | |
| | 39 | | | | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 45 | 79'-81' | D | 24 | 24 | 21/26 | | | No Rec. | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 72

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| | | | | | | | |
|---------------------------|-------------------|-------------------|---------|-----------|----------------------|-------|------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time | |
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | _____ | a.m. |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ | p.m. |
| | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ | |
| | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ | |
| | | | | | INSPECTOR _____ | _____ | |
| | | | | | SOILS ENGR. _____ | _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|--|---|--------|-------|--------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 34 | | | | | | | Moist N.D. | Gray Fine to Coarse SAND, & Silt, Some Fine to Coarse Gravel | | | | |
| 33 | | | | | | | | | | | | |
| 39 | | 81'-83' | D | 20 | 23 | 26/28 | | | | | 14 | 24" 9" |
| 45 | | | | | | | | | | | | |
| 32 | | 85'-87' | | | | | | | | | - | 24" 0" |
| | | | | | | | " " | 90' | Gray Fine to Coarse SAND, & Gravel, Little Silt | 15 | 36" - | |
| | | 87'-90' | D | 19 | 38 | 30 | | | | | | |
| | | | | 40 | 38 | 37 | | | Bottom of Boring at 90' | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

| | | | | |
|--|---|--|---|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" rail on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
|--|---|--|---|--|

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 73
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.8

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| | | | | | | | |
|---------------------------|-------------------|---|---|---|---------------------------------|-----------------------|------------|
| GROUND WATER OBSERVATIONS | | Rods-"AW" Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | CASING HW & _____ BW _____ 300# _____ 24" _____ | SAMPLER S/S _____ 1 3/8" _____ 140# _____ 30" _____ | CORE BAR. _____ BIT _____ | Date | Time |
| At <u>9'</u> | after _____ Hours | | | | | START <u>12/28/71</u> | _____ a.m. |
| At _____ | after _____ Hours | COMPLETE <u>12/29/71</u> | _____ p.m. | | | | |
| | | TOTAL HRS. _____ | | | | | |
| | | BORING FOREMAN <u>J. Klang</u> | | | | | |
| | | INSPECTOR <u>R. Varnum</u> | | | | | |
| | | SOILS ENGR. _____ | | | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 5 | 20 | | | | | | Moist loose | 9' | Black ASHES, little fine to medium Sand & Gravel, Fill | | | |
| | 27 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 38 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| 10 | 10 | 5'-6'6" | D | 3 | 3 | 4 | Moist medium dense | 15' | Brown fine to medium SAND, little silt, trace of fine gravel, Fill (fuel odor noted) | 1 | 18' | 16" |
| | 18 | | | | | | | | | | | |
| | 20 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 17 | | | | | | | | | | | |
| 15 | 9 | 10'-11'6" | D | 4 | 6 | 6 | Hammer | 25' | Gray Organic SILT, Shells | | | |
| | 18 | | | | | | | | | | | |
| | 16 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 9 | 15'-16'6" | D | 4 | 3 | 2 | | | | | | |
| 20 | 7 | 16'6"-18' | D | Pushed-Wc. of Hammer | | | Wet loose | 27' | Gray fine SAND, some organic silt | | | |
| | 9 | | | | | | | | | | | |
| | 4 | 18'-20' | Shelby | 2" | | | | | | | | |
| | 4 | 20'-22' | UP | Pressed | | | | | | | | |
| | 5 | | | | | | | | | | | |
| 25 | 6 | | | | | | W/soft | 28' | Gray fine to coarse SAND, some shells | | | |
| | 6 | | | | | | | | | | | |
| | 7 | | | | | | | | | | | |
| | 7 | | | | | | | | | | | |
| | 16 | 26'6"-27' | D | 9 | | | | | | | | |
| 30 | 18 | 27'-28' | D | 2 | 2 | | Wet/m dense | 30' | Gray Organic SILT w/f Sand | 4 | 6" | 6" |
| | 19 | | | | | | | | | | | |
| | 26 | | | | | | | | | | | |
| | 42 | 28'6"-30' | D | 11 | 11 | 11 | | | | | | |
| | 7 | 30'-31'6" | D | 16 | 8 | 9 | | | | | | |
| 35 | 17 | | | | | | Wet medium dense | 31'6" | Gray F-C SAND, little F-M gravel, some silt | | | |
| | 17 | 31'6"-33' | D | 10 | 10 | 11 | | | | | | |
| | 22 | | | | | | | | | | | |
| | 27 | | | | | | | | | | | |
| | 4 | 35'-36'6" | D | 10 | 8 | 9 | | | | | | |
| 40 | 10 | | | | | | W/m/d | 31'6" | Gray fine to coarse GRAVEL, little fine to coarse sand | | | |
| | 12 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 13 | | | | | | | | | | | |
| | | | | | | | | | | | | |

(Note: At 30' reduce to BW)

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V. Stiff

SUMMARY:
 Earth Boring 46'6"
 Rock Coring _____
 Samples 10

HOLE NO 73

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 73-A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.0

To Haley & Aldrich, Inc. ADDRESS CAMBRIDGE, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| | | | | |
|---|---|---|------------------------------------|--|
| GROUND WATER OBSERVATIONS At <u>18'</u> after <u>0</u> Hours <u>12/31/71 - 9:00</u> At _____ after _____ Hours | Rods-"AW" CASING Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ _____ BIT | Date _____ Time _____ START <u>12/29/71</u> COMPLETE <u>12/29/71</u> TOTAL HRS. _____ BORING FOREMAN <u>Quagliaroli</u> INSPECTOR <u>K. Varnum</u> SOILS ENGR. _____ |
|---|---|---|------------------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|--|---|---------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Re |
| 6 | | | | | | | | Brown Fine to Coarse SAND & GRAVEL(Fill) | | | | |
| 8 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 6 | | 15'-15'6" | D | 5 | | | Loose | 15'6" | | 1 | 6" | 5" |
| 4 | | 15'6"-16'6" | D | | 2 | 2 | Wet | | Gray Org. SILT, Trace Shells Trace Fine SAND | 1A | 12" | 1" |
| 2 | | 17'-19' | Press 2" | | | | | | | UT-124' | 22" | |
| 2 | | | | | | | | | | | | |
| 3 | | 19'-21' | Press 2" | | | | | | | UT-124' | 20" | |
| 3 | | 21'-22'6" | D | 4 | 2 | 2 | Wet Soft | | | 2 | 18" | 16" |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | 30' | | | | |
| 7 | | 30'6"-22'6" | Press 2" | | | | | | Gray Fine to Coarse SAND, Trace Silt, Little Fine Gravel, Little Silt | - | 24" | 0" |
| 12 | | 32'6"-34'6" | Press 2" | | | | | | | - | 24" | 0" |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 13 | | 34'6"-36' | D | 6 | 9 | 8 | Wet M.D. | | | 3 | 18" | 15" |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 21 | | | | | | | Wet | 39' | Gray Org. Silt, Trace Wood | | | |
| 23 | | 40'-41'6" | D | 2 | 3 | 4 | Loose | | Mixed With The Sand | 4 | 18" | 14" |

| | | | |
|---|---|--|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ "CASING: THEN _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50 + Very Dense 15-30 V-Stiff | SUMMARY: Earth Boring <u>71'</u> Rock Coring _____ Samples <u>8</u> HOLE NO. _____ |
|---|---|--|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 12/28/71
 HOLE NO. 74
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.0

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | Rods-"AW" CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|------------------------|---------------|-----------|-----------------------------|--------------|
| At <u>20'8"</u> | after <u>1/2</u> Hours | Type _____ | <u>S/S</u> | _____ | START <u>12/28/71</u> | a.m. p.m. |
| At _____ | after _____ Hours | Size I.D. <u>BW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>12/29/71</u> | a.m. p.m. |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | _____ | BORING FOREMAN <u>Gomes</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. | | |
| 2 | | | | | | | | 5' | No Sample to 5' | | | | | |
| 6 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 4 | | 5'-6'6" | D | 2 | 2 | 3 | Wet Loose | 15' | Dark Gray Fine to Coarse SAND, Gravel, Ash & Cinders (Oil Soaked), Fill | 1 | 18' | 7' | | |
| 5 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 3 | | 10'-11'6" | D | 3 | 3 | 5 | | | | | | 2 | 18' | 9" |
| 7 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 2 | | 15'-16'6" | D | 1 | 1 | 1 | Moist Soft | 21' | Gray Org. SILT, 2" S-Tube 17'-19' No Rec. 2" S-Tube 19'-21' | 3 | 18' | 12' | | |
| 2 | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
| 2 | | 21'-22'6" | D | 4 | 5 | 6 | Moist M.D. | 23' | Gray Fine to Med. SAND, Some Silt, Trace Fine Gravel | 4 | 18' | 12' | | |
| 5 | | | | | | | | | | | | | | |
| 5 | | 23'-24'6" | D | 6 | 20 | 24 | Moist M.D. | 32'6" | Gray Fine to Coarse SAND, Some Fine Gravel, Little Silt | 5 | 18' | 9" | | |
| 17 | | | | | | | | | | | | | | |
| 8 | | 25'-26'6" | D | 12 | 9 | 14 | " " | | | | | 6 | 18' | 11" |
| 27 | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 19 | | 30'-31'6" | D | 36 | 24 | 32 | | | | 7 | 18' | 1' | | |
| 26 | | | | | | | | | | | | | | |
| 21 | | | | | | | Moist Loose | 32'6" | Gray Brown Fine to Med. SAND, Little Fine Gravel, Silt | | | | | |
| 8 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 6 | | 35'-36'6" | D | 5 | 8 | 9 | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 20 | | 36'6"-38' | D | 7 | 9 | 8 | | | | 8 | 18' | 11" | | |
| 25 | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | | SUMMARY: Earth Boring <u>46</u> Rock Coring _____ Samples <u>10</u> |
| | | | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1

DATE _____

HOLE NO. 74 A

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.3

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Providence Gas Co.

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. _____

SAMPLES SENT TO "

OUR JOB NO. 71-508

| | | | | | | | | | |
|----------------------------|--|---|--------|---------|-----------|--------------------------------|--------|------|------|
| GROUND WATER OBSERVATIONS | | RODS - "AW" Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | CASING | SAMPLER | CORE BAR. | START | Date | Time | |
| At _____ after _____ Hours | | | BW | S/S | | 1/4/72 | | | a.m. |
| At _____ after _____ Hours | | | 300# | 1 3/8" | | COMPLETE | 1/4/72 | | p.m. |
| | | | 24" | 140# | | TOTAL HRS. _____ | | | |
| | | | | 30" | BIT | BORING FOREMAN <u>A. Gomes</u> | | | |
| | | | | | | INSPECTOR _____ | | | |
| | | | | | | SOILS ENGR. _____ | | | |

(EXPLORATION PROBE)

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--|-----|---------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 5 | 22 | | | | | | | FILL | | | | |
| | 40 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 19 | | | | | | | | | | | |
| | 67 | | | | | | | | | | | |
| | 26 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| 10 | 7 | | | | | | | Moist loose | 16'6" | Gray F-C SAND & Organic Silt, little fine gravel.* | 1 | 24' 10" |
| | 11 | | | | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| 15 | 13 | | | | | | | Wet/v dense | 18'6" | Gray fine to coarse SAND & Gravel with some silt | 2 | 24' 7" |
| | 9 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 1 | 15'-16' | D | 10 | 6 | | | | | | | |
| | 1 | 16'-17' | D | 6 | 2 | | | | | | | |
| 20 | 1 | 17'-18' | D | 1 | 0 | | | | | | | |
| | 15 | 18'-19' | D | 1 | 8 | | | | | | | |
| | 20 | 19'-19'6" | D | 18 | | | | | | | | |
| 25 | | 20'-22' | D | 43 | 21 | 23 | | | 22' | | | |
| | | | | | | 48 | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Bottom of Boring 22'0"

* trace of shells
(O.E. #1 - 16'6" to 18'6")

| | | | |
|---------------------------------|------------------|---|-------------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Earth Boring <u>22'</u> |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Rock Coring _____ |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Samples <u>2</u> |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |
| | | | HOLE NO. <u>74 A</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, INC. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-508

SHEET 1 OF 2
 DATE 1/13/72
 HOLE NO. 76
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -3.6' (MHW)

| | | | | |
|---|---|---|---------------------------|--|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods - "AW" CASING Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ BIT | Date _____ Time _____ START <u>1/12/72</u> a.m. COMPLETE <u>1/13/72</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>AL Whitaker</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____ |
|---|---|---|---------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | PUSH | | | | | | | | | | | |
| | to | | | | | | | 2' | Black Org. SILT, with Layers of Coarse to Fine Sand | | | |
| | 10' | 0'-5' | D | PUSH | | | | | Black Org. SILT | 1 | 60" | 24" |
| | | 7'-9' | ST | PUSH | | | | | | ST1 | 24" | 16" |
| | | | | | | | | 10' | | | | |
| | 2' | 9'-11' | D | PUSH | PUSH | 15 | | | Black Fine to Coarse SAND, Trace Gravel, Little Silt | 2 | 24" | 24" |
| | 9 | | | | | 17 | | | | 2A | | |
| | 14 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 23 | 15'-17' | D | | 8 | 10 | 15 | 15' | | 3 | 24" | 16" |
| | 7 | | | | | 17 | | | Gray Brown SILT, Little Fine SAND | | | |
| | 13 | | | | | | | | | | | |
| | 18 | | | | | | | 18' | | | | |
| | 28 | | | | | | | | | | | |
| | 31 | 20'-22' | D | | 15 | 13 | 17 | | Gray Brown Fine to Coarse SAND, Trace Gravel, & Silt | 4 | 24" | 20" |
| | 18 | | | | | 17 | | | | | | |
| | 30 | | | | | | | | | | | |
| | 27 | | | | | | | | | | | |
| | 29 | | | | | | | | | | | |
| | 25 | 25'-27' | D | | 15 | 15 | 17 | 25' | | 5 | 24" | 20" |
| | 31 | | | | | 20 | | | Gray Brown SILT, Trace Fine Sand | | | |
| | 40 | | | | | | | | | | | |
| | 33 | | | | | | | 28' | | | | |
| | 33 | | | | | | | | | | | |
| | 37 | 30'-32' | D | | 18 | 18 | 25 | | Brown Fine to Coarse Gravel & Sand, Trace Silt | 6 | 24" | 8" |
| | 24 | | | | | 34 | | | | | | |
| | 29 | | | | | | | | | | | |
| | 57 | | | | | | | | | | | |
| | 49 | | | | | | | | | | | |
| | 52 | 35'-37' | D | | 17 | 17 | 21 | 35' | | 7 | 24" | 15" |
| | 17 | | | | | 20 | | | Brown SILT with Sand Layers | | | |
| | 18 | | | | | | | 37' | | | | |
| | 26 | | | | | | | | Gray Fine SAND | | | |
| | 35 | | | | | | | | | | | |
| | 43 | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 52'
 Rock Coring _____
 Samples 10

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 76

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 26 | | 40'-42' | D | 2 | 7 | 10 | | 41.5' | Gray Fine SAND | 8 | 24" | 20" |
| 25 | | | | 14 | | | | | Brown Fine SAND, Trace Silt | | | |
| 33 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 58 | | 45'-47' | D | 11 | 11 | 12 | | 45' | | 9 | 24" | 18" |
| 21 | | | | 12 | | | | | Gray Silty Fine SAND | | | |
| 30 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 49 | | 50'-52' | D | 17 | 17 | 21 | | 50' | | 10 | 24" | 20" |
| | | | | 20 | | | | | Gray Silt, Trace Layers of Clay | | | |
| | | | | | | | | 52' | Bottom of Boring at 52' | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type

D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used

trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency

0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:

Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 1/12/72
 HOLE NO. 77
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -4.8(MHW)

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-508

| | | | | | |
|---|--|---------------------|---|--------------------------------|--|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods-"AW" Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING <u>BW</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> | CORE BAR. BIT <u>30"</u> | Date _____ Time _____ START <u>1/11/72</u> _____ a.m. COMPLETE <u>1/12/72</u> _____ p.m. TOTAL HRS. _____ BORING FOREMAN <u>Al Whitaker</u> INSPECTOR <u>K. Varnum</u> SOILS ENGR. _____ |
|---|--|---------------------|---|--------------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | PUSH | | | | | | | | | | | |
| | to 17' | 0'-2' | D | PUSH | | | | | Black Sandy Org. SILT | 1 | 24" | 11" |
| | | 2'-4' | UP | PUSH | | | | | | UP1 | 24" | 24' |
| | | 4'-8' | D | PUSH | | | | | | 2 | 48" | 14" |
| | | | | | | | | | | | | |
| | | 11'-13' | D | PUSH | | | | | | 3 | 24" | 20" |
| | | | | | | | | 14.5' | | | | |
| | | 16'-18' | ST | PUSH | | | | | Gray Org. SILT | ST1 | 24" | 18" |
| | 1 | 18'-20' | D | PUSH | | | | | | 4 | 24" | 14' |
| | 2 | | | | | | | | | | | |
| | 1 | 21'-23' | UP | PUSH | | | | | | UP2 | 24" | 20' |
| | 4 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | 4 | 23'-25' | D | PUSH | | | | | | 5 | 24" | 18" |
| | 4 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 4 | 29'-31' | UP | PRESS | | | | | | UP3 | 24" | 20' |
| | 7 | | | | | | | | | | | |
| | 12 | 31'-33' | D | PRESS | | | | 32.8' | | 6 | 24" | 18" |
| | 12 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 14 | | | | | | | 35' | Black Fine to Med. SAND, Little Silt | | | |
| | 7 | 36'-38' | D | 1 1 1 | | | | | Gray Org. Silt | 7 | 24" | 14" |
| | 6 | | | 1 | | | | | | | | |
| | 8 | | | Sample in Jar | | | | | | | | |
| | 7 | 39'-41' | ST | PUSH | | | | 40' | | 8 | 24" | 14" |
| | 11 | | | 7 | | | | | Dark Brown F-C SAND, Little Silt | | | |

| | | |
|--|---|--|
| GROUND SURFACE TO _____ | USED _____ CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwell | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | SUMMARY: Earth Boring <u>62'</u> Rock Coring _____ Samples <u>12</u> HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 77
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|----------------------------|-------------------|--------|---------|-----------|----------------------|------------|
| At _____ after _____ Hours | Type _____ | _____ | _____ | _____ | START _____ | g.m. _____ |
| At _____ after _____ Hours | Size I.D. _____ | _____ | _____ | _____ | COMPLETE _____ | p.m. _____ |
| | Hammer Wt. _____ | _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | Hammer Fall _____ | _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| 47 | | | | | | | | 42' | Dark Brown Fine to Coarse Sand, Little Silt | | | | |
| 33 | | | | | | | | | Gray Coarse to Fine GRAVEL & SAND, Trace Silt | | | | |
| 47 | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | |
| 61 | 44'-46' | D | | 14 | 19 | 20 | | | | | 9 | 24" | 8" |
| 70 | | | | 24 | | | | | | | | | |
| 82 | | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | |
| 50 | 49'-51' | D | | 12 | 15 | 15 | | | | | 10 | 24" | 10" |
| 100 | | | | 18 | | | | | | | | | |
| 140 | | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | | |
| 117 | | | | | | | | 55' | | | | | |
| 72 | 55'-57' | D | | 15 | 12 | 12 | | | Gray Fine to Coarse SAND, Little Silt | 11 | 24" | 10" | |
| 98 | | | | 11 | | | | | | | | | |
| 140 | | | | | | | | | | | | | |
| 260 | | | | | | | | | | | | | |
| 180 | | | | | | | | | | | | | |
| | 60'-62' | D | | 14 | 15 | 12 | | | | 12 | 24" | 12" | |
| | | | | 16 | | | | 62' | | | | | |
| | | | | | | | | | Bottom of Boring at 62' | | | | |

| | | | |
|--|---|---|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | HOLE NO. <u>77</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE 1/12/72
 HOLE NO. 78
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -5.3 (MHW)

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | RODS - "AW" Type | CASING Size I.D. | SAMPLER S/S | CORE BAR BIT | Date | Time |
|---------------------------|-------------------|---------------------|---------------------|----------------|-----------------|----------------|--------------------|
| At _____ | after _____ Hours | | | | | BW | 1 3/8" |
| At _____ | after _____ Hours | 300# | 140# | | | 1/11/72 | _____ a.m. |
| | | Hammer Wt. | 24" | 30" | | TOTAL HRS. | |
| | | Hammer Fall | | | | BORING FOREMAN | <u>Al Whitaker</u> |
| | | | | | | INSPECTOR | <u>R. Varnum</u> |
| | | | | | | SOILS ENGR. | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|------|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | PUSH | | | | | | | | | | | |
| | to 0'-5' | D | PUSH | | | | | 4' | Black SILT, Trace Org. Material | 1 | 60" | 24" |
| | 16' | | | | | | | | | | | |
| | | 5'-7' | D | PUSH | | | | | Gray Org. SILT | 2 | 24" | 19" |
| | | 8'-10' | ST | PUSH | | | | | | St | 124" | 14" |
| | | 12'-14' | UP | PUSH | | | | | | UP1 | 24" | 21" |
| | | 14'-16' | D | PUSH | | | | | | 3 | 24" | 20" |
| 1 | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | |
| 1 | | 20'-22' | ST | PUSH | | | | | | ST2 | 24" | 19" |
| 1 | | | | | | | | | | | | |
| 2 | | 22'-24' | D | PUSH | | | | | | 4 | 24" | 18" |
| 3 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 4 | | 27'-29' | UP | PUSH | | | | | | UP2 | 20" | 18" |
| 4 | | 29'-31' | D | PUSH | | | | | | 5 | 24" | 18" |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | 35'-37' | UP | PUSH | | | | | | UP3 | 24" | 17" |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | 37' | | | | |
| 20 | | 37'-39' | D | 2 | 6 | 6 | | | Black Fine to Med. SAND, Trace Silt | 6 | 24" | 13" |
| 25 | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |

| | | | |
|---------------------------------|------------------|---|----------------------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: Earth Boring <u>59'</u> |
| Sample Type | Proportions Used | 140lb Wt. x 30" tall on 2" O.D. Sampler | Rock Coring _____ |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Samples <u>11</u> |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | Cohesive Consistency | |
| | | 0-4 Soft | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |
| | | | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 78

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| | | |
|--|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR.</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date _____ Time _____</p> <p>START _____ o.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 17 | | 41'-42.5' | D | 2 | 2 | 5 | | | Gray Stiff Org. SILT, with Fine Sand Layers | 7 | 18" | 18" |
| 16 | | 42.5-43' | D | 7 | | | | 42.5' | | 7A | 5" | 5" |
| 26 | | | | | | | | 43' | Brown Sandy PEAT | | | |
| 45 | | | | | | | | | Gray Fine to Med. SAND, with 1/2" Layers of Silt | 8 | 24" | 20" |
| 83 | | 45'-47' | D | 14 | 15 | 15 | | | | | | |
| 81 | | | | 18 | | | | 47' | | | | |
| 63 | | | | | | | | | Gray Fine SAND, Little Silt | | | |
| 54 | | | | | | | | | | | | |
| 55 | | | | | | | | | Bottom of Boring at 59' | 9 | 24" | 18" |
| 57 | | 50'-52' | D | 11 | 7 | 9 | | | | | | |
| 30 | | | | 10 | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 42 | | 55'-57' | D | 9 | 10 | 10 | | | | 10 | 24" | 20" |
| | | | | 10 | | | | | | | | |
| | | 57'-59' | D | 11 | 10 | 10 | | | | 11 | 24" | 18" |
| | | | | 13 | | | | | | | | |
| | | | | | | | | 59' | | | | |

| | | | |
|---|--|--|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140 lb Wt. x 30" fall on 2" O.D. Sampler</p> <p>Cohesionless Density</p> <p>0-10 Loose</p> <p>10-30 Med. Dense</p> <p>30-50 Dense</p> <p>50+ Very Dense</p> | <p>Cohesive Consistency</p> <p>0-4 Soft 30+ Hard</p> <p>4-8 M/Stiff</p> <p>8-15 Stiff</p> <p>15-30 V-Stiff</p> |
| <p>SUMMARY:</p> <p>Earth Boring _____</p> <p>Rock Coring _____</p> <p>Samples _____</p> | | | <p>HOLE NO. _____</p> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

SHEET 1 OF 2
 DATE 1/7/72
 HOLE NO. 79
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -6.0' (MHW)

| | | | | |
|---|--|---|-----------------------------|---|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>4"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1' 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>1/4/72</u> _____ p.m. COMPLETE <u>1/6/72</u> _____ p.m. TOTAL HRS. _____ BORING FOREMAN <u>Whitaker</u> INSPECTOR <u>R. Varham</u> SOILS ENGR. _____ |
|---|--|---|-----------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|------|------|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. | |
| P | | | | | | | | | Soft Black SILT, Trace Fine Sand | | | | |
| U | | 0'-3' | D | PUSH | | | | | | 1 | 36' | 18" | |
| S | | | | | | | | | | | | | |
| H | | | | | | | | | | | | | |
| 1 | | 5'-7' | D | PUSH | | | | | | 2 | 24' | 18" | |
| 1 | | | | | | | | | | | | | |
| 1 | | 7'-9.5' | ST | PUSH | | | | 7' | | ST1 | 30' | 13" | |
| 1 | | | | | | | | | Gray Org. SILT | | | | |
| 1 | | | | | | | | | | | | | |
| 1 | | 10'-12' | UP | PUSH | | | | | | | UP1 | 24' | 24" |
| 1 | | | | | | | | | | | | | |
| 1 | | 12'-13.5' | D | PUSH | | | | | | | 3 | 18' | 16" |
| 1 | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 2 | | 16'-18' | UP | PUSH | | | | | | | UP2 | 24' | 15" |
| 2 | | | | | | | | | | | | | |
| 3 | | 18'-19.5' | D | PUSH | | | | | | | 4 | 18' | 18" |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | 23'-25' | ST | PUSH | | | | | | ST2 | 24' | 24" | |
| 5 | | | | | | | | | | | | | |
| 6 | | 25'-26.5' | D | PUSH | | | | | | 5 | 18' | 12" | |
| 7 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 6 | | 31'-33' | UP | PUSH | | | | | | UP3 | 24' | 24" | |
| 9 | | | | | | | | | | | | | |
| 10 | | 33'-34' | D | PUSH | | | | | | 6 | 12' | 12" | |
| 10 | | 34'-34.5' | D | PUSH | | | | | | 6A | 6" | 6" | |
| 12 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 33 | | 38'-40' | ST | PRESS | | | | 39' | | ST3 | 24' | 24" | |
| 64 | | | | | | | | | | | | | |

| | | | |
|--|--|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used: trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | | SUMMARY: Earth Boring <u>55'</u> Rock Coring _____ Samples <u>10</u> |
| TOWN PRESS - EAST PROV. | | | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE 1/7/72
 HOLE NO. 80
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -7.5' (MHW)

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| | | | | |
|---|---|--|--------------------------------|---|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods-"AW" CASING Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> | CORE BAR. BIT <u>30"</u> | Date _____ Time _____ START <u>1/6/72</u> COMPLETE <u>1/7/72</u> TOTAL HRS. _____ BORING FOREMAN <u>Whitaker</u> INSPECTOR <u>R. Varham</u> SOILS ENGR. _____ |
|---|---|--|--------------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|----------|-----------|------------------------------|--|---|--------|-----|----|
| | | | | From 0-6' | To 6-12' | To 12-18' | | | | No. | Pen | Re |
| | | | | | | | | | | | | |
| | P | | | | | | | Soft Black Sandy SILT | | | | |
| | u | 0'-4' | D | PRESS | | | | | 1 | 4' | 1 | |
| | s | | | | | | | | | | | |
| | h | | | | | | 4' | | | | | |
| | To | 4'-5' | D | PRESS | | | | Gray Org. SILT | 1A | 1' | 6" | |
| | 12' | | | | | | | | | | | |
| | | 6'-8.5' | ST | PRESS | | | | | ST1 | 30' | 15 | |
| | | | | | | | | | | | | |
| | | 9'-11' | ST | PRESS | | | | | ST2 | 24' | 12 | |
| | | | | | | | 11' | | | | | |
| | | 11'-13' | D | 9 | 9 | 6 | | Gray Med. to Fine SAND, Little Gravel & Silt | 2 | 24' | 14' | |
| | 3 | | | 3 | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 8 | | | | | | | | | | | |
| | 7 | 16'-17.5' | D | 5 | 10 | 15 | | | 3 | 18' | 15' | |
| | 3 | 17.5'-18' | D | 15 | | | | | 3A | 6" | - | |
| | 5 | | | | | | 17.5' | | | | | |
| | 9 | | | | | | | Brown Med. to Fine SAND, & Gravel, Little Silt | | | | |
| | 14 | | | | | | | | | | | |
| | 14 | 22'-24' | D | 15 | 15 | 21 | | | 4 | 24' | 12' | |
| | 1 | | | 31 | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 24 | 26.5'-28.5' | D | 10 | 10 | 10 | | | 5 | 24' | 12' | |
| | 9 | | | 16 | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 26 | 31.5'-33.5' | D | 15 | 16 | 17 | | | 6 | 24' | 12' | |
| | | | | 20 | | | | | | | | |
| | | | | | | | 31.5' | Brown Silty Fine SAND | | | | |
| | | | | | | | 33.5' | | | | | |
| | | | | | | | | Bottom of Boring at 33.5' | | | | |

| | | | | |
|---|---|--|--|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ "CASING: THEN _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>33.5'</u> Rock Coring _____ Samples <u>6</u> HOLE NO. _____ |
|---|---|--|--|--|

SHEET 1 of 2
 DATE 11/10/71
 HOLE NO. 100
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -25.5

| | | | | | | | |
|----------------------------|-------------------------|-------------|---------------|-----------|----------------------------------|-----------------|-------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | START | Date | Time |
| At _____ after _____ Hours | Type <u>Rods - "AW"</u> | <u>8/S</u> | <u>1 3/8"</u> | _____ | COMPLETE | <u>11/9/71</u> | _____ |
| At _____ after _____ Hours | Size I.D. <u>2 1/2"</u> | <u>300#</u> | <u>140#</u> | _____ | TOTAL HRS. _____ | <u>11/10/71</u> | _____ |
| | Hammer Wt. <u>24"</u> | <u>30"</u> | _____ | BIT | BORING FOREMAN <u>C. LANTIER</u> | | |
| | Hammer Fall _____ | _____ | _____ | _____ | INSPECTOR _____ | | |
| | | _____ | _____ | _____ | SOILS ENGR. _____ | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Flows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-----------|-----------------------|-------------------------|----------------|-------------------------|-----------|-----------|------------------------------|---------------------|---|----------|------------|------------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No | Pen | Rec |
| | | <u>0'-1'6"</u> | <u>D</u> | <u>10</u> | <u>15</u> | <u>22</u> | <u>Wet Soft</u> | | <u>Black Organic Silt</u> | <u>1</u> | <u>18"</u> | <u>18"</u> |
| | | | | | | | | <u>4'6"</u> | | | | |
| | | | | | | | | <u>5'6"</u> | <u>Brown Silty Fine Sand</u> | | | |
| | | <u>5'6"-7'</u> | <u>D</u> | <u>10</u> | <u>15</u> | <u>22</u> | <u>Wet D.</u> | | <u>Black Organic SILT, little Fine to Coarse Sand, Trace Fine Gravel</u> | <u>2</u> | <u>18"</u> | <u>18"</u> |
| <u>16</u> | | | | | | | | | | | | |
| <u>32</u> | | | | | | | | | | | | |
| <u>46</u> | | <u>8'-9'6"</u> | <u>D</u> | <u>24</u> | <u>23</u> | <u>26</u> | <u>Wet D.</u> | | | <u>3</u> | <u>18"</u> | <u>18"</u> |
| <u>5</u> | | | | | | | | | | | | |
| <u>8</u> | | | | | | | | | | | | |
| <u>18</u> | | | | | | | | <u>13'</u> | | | | |
| <u>29</u> | | <u>13'-14'6"</u> | <u>D</u> | <u>15</u> | <u>15</u> | <u>13</u> | <u>Wet M.D.</u> | | <u>Brown Fine to coarse SAND, little Silt, Trace fine Gravel</u> | <u>4</u> | <u>18"</u> | <u>12"</u> |
| <u>37</u> | | | | | | | | | | | | |
| <u>41</u> | | | | | | | | | | | | |
| <u>49</u> | | <u>18'-19'6"</u> | <u>D</u> | <u>26</u> | <u>18</u> | <u>21</u> | <u>Wet D.</u> | | | <u>5</u> | <u>18"</u> | <u>6"</u> |
| <u>60</u> | | | | | | | | | | | | |
| <u>16</u> | | | | | | | | | | | | |
| <u>38</u> | | | | | | | | | | | | |
| <u>39</u> | | | | | | | | | | | | |
| <u>30</u> | | <u>23'-24'6"</u> | <u>D</u> | <u>28</u> | <u>18</u> | <u>18</u> | <u>Wet D.</u> | <u>24'6"</u> | | <u>6</u> | <u>18"</u> | <u>9"</u> |
| <u>49</u> | | | | | | | | | | | | |
| <u>13</u> | | | | | | | | | <u>Gray Fine to Medium Sand Some Silt</u> | | | |
| <u>26</u> | | | | | | | | | | | | |
| <u>32</u> | | | | | | | | | | | | |
| <u>40</u> | | | | | | | | | | | | |
| <u>33</u> | | | | | | | | | | | | |
| <u>38</u> | | <u>30'-31'6"</u> | <u>D</u> | <u>11</u> | <u>17</u> | <u>23</u> | <u>Wet D.</u> | | | <u>7</u> | <u>18"</u> | <u>15"</u> |
| <u>32</u> | | | | | | | | | | | | |
| <u>32</u> | | | | | | | | | | | | |
| <u>35</u> | | | | | | | | | | | | |
| <u>31</u> | | | | | | | | | | | | |
| <u>27</u> | | <u>35'9"-37'3"</u> | <u>D</u> | <u>6</u> | <u>9</u> | <u>17</u> | <u>Wet medium dense</u> | | | <u>8</u> | <u>18"</u> | <u>8"</u> |
| <u>30</u> | | | | | | | | | | | | |
| <u>33</u> | | | | | | | | | | | | |
| <u>39</u> | | | | | | | | | | | | |
| <u>42</u> | | | | | | | | | | | | |

| | | | |
|---------------------------------|------------------|---------------------|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler |
| Sample Type | Proportions Used | | Cohesionless Density Cohesive Consistency |
| D=Dry C=Cared W=Washed | trace 0 to 10% | | 0-10 Loose 0-4 Soft 30+ Hard |
| UP=Undisturbed Piston | little 10 to 20% | | 10-30 Med. Dense 4-8 M/Stiff |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | | 30-50 Dense 8-15 Stiff |
| UT=Undisturbed Thinwall | and 35 to 50% | | 50+ Very Dense 15-30 V-Stiff |
| | | | SUMMARY: Earth Boring <u>64'6"</u> Rock Coring Samples <u>14</u> |
| | | | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE 11/10/71
 HOLE NO. 100
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | _____ | INSPECTOR _____ | _____ |
| | | | | | _____ | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Elows per 6" on Sample: | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 27 | | 40'3" - 41'9" D | D | 8 | 9 | 15 | Wet D. | 40' | Gray Fine to Medium Sand, Trace Silt (Running) | 9 | 18" | 18" |
| 30 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 21 | | 45' - 46'6" D | D | 13 | 17 | 27 | Wet D. | | | 10 | 18" | 7" |
| 28 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | |
| 28 | | 50' - 51'6" D | D | 13 | 15 | 19 | Wet D. | | | 11 | 18" | 10" |
| 31 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | |
| 42 | | | | | | | Wet | 55' | | | | |
| 32 | | 55' - 56'6" D | D | 13 | 17 | 29 | V.D. | | Gray Fine to Coarse SAND, Trace Silt (Running) | 12 | 18" | 6" |
| 30 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | |
| 78 | | | | | | | | | | | | |
| 80 | | 60' - 61'6" D | D | 13 | 27 | 44 | Wet V.D. | | | 13 | 18" | 5" |
| 80 | | | | | | | | | | | | |
| 116 | | | | | | | | | | | | |
| 101 | | | | | | | | | | | | |
| 107 | | | | | | | | | | | | |
| 57 | | 63' - 64'6" D | D | 10 | 21 | 26 | Wet V.D. | | | 14 | 18" | 12" |
| 97 | | | | | | | | | | | | |
| 137 | | | | | | | | | | | | |
| | | | | | | | | 64'6" | Bottom of Boring at 64'6" | | | |

GROUND SURFACE TO _____ USED _____ CASING: THEN _____

| | | | |
|---|--|---|---|
| <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> |
|---|--|---|---|

HOLE NO _____

TOWN PRESS - EAST PROV.

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO _____
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS _____
 LOCATION **PROV. GAS CO.**
 PROJ. NO. _____
 OUR JOB NO. _____

SHEET _____
 DATE _____
 HOLE NO. _____
 LINE & STA. _____
 OFFSET _____

| | | | | | |
|----------------------------|------------------------|------------------------|------------|-----------|----------------------------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | SURFACE ELEV. -29.58 |
| At _____ after _____ Hours | Type _____ | Size I.D. 2 1/2 | 5/8 | _____ | DATE STARTED 11-15-91 |
| At _____ after _____ Hours | Hammer Wt. 300 | 13/8 | 140 | _____ | DATE COMPL. _____ |
| | Hammer Fall 24" | 30" | 30" | BIT _____ | BORING FOREMAN C. GENTING |
| | | | | | INSPECTOR _____ |
| | | | | | SOILS ENGR. _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 5" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-5 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | | 0 - 1'6" | D | 0 | 5 | 4 | WET SOFT | | BRN ORGANIC SILT | 1 | 18 | 4" |
| | | 6' - 7'6" | D | 7 | 8 | 8 | WET M-B | 6' | DARK BR. F-C SAND LIT-LE F-M GRAVEL TR. SILT (ORGANIC MATTER) | 2 | 18 | 6" |
| 10 | 26 | 11' - 12'6" | D | 17 | 13 | 12 | WET M-B | 11' | GR. BR. F-C SAND SOME SILT TR. F-M GRAVEL | 3 | 18 | 6" |
| 33 | 45 | | | | | | | | | | | |
| 43 | | 6' 16 1/2" - 18' | D | 24 | 16 | 18 | WET M-B | | | 4 | 18 | 12 |
| 10 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 42 | | 18' 23 1/2" - 25' | D | 20 | 14 | 16 | WET M-B | | | 5 | 18 | 10 |
| 18 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 31 | | 29 1/2" - 30' | D | 17 | 14 | 17 | WET M-B | | | 6 | 18 | 9 |
| 40 | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 12 | | 33' - 34'6" | D | 6 | 5 | 5 | WET M-B | 33' | BROWN WET-LAISE 10-C SAND TR. SILT SOME F-M GRAVEL | 7 | 18 | 8 |
| 23 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 11 | | 38' - 39'6" | D | 20 | 24 | 29 | WET Y-D | | BRN. F-C SAND ^{SAND} LITTLE F-C GRAVEL | 8 | 18 | 8 |
| 16 | | | | | | | | | | | | |

| | | | |
|---------------------------------|--|---|------------------------|
| GROUND SURFACE TO 70' | USED 2 1/2" CASING: THEN SAMPLER | 140lb Wt. x 30" tall on 2" O.D. Sampler | SUMMARY |
| Sample Type | Proportions Used | Cohesionless Density | Earth Boring 73 |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 Loose | Rock Coring 0 |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | Samples 18 |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | |
| | | Cohesive Consistency | |
| | | 0-4 Soft | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |
| | | 30+ Hard | |
| | | | HOLE NO. 102 |

American Drilling & Boring Co., Inc.
 100 WATER STREET EAST PROVIDENCE, R.I.
 TO: _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

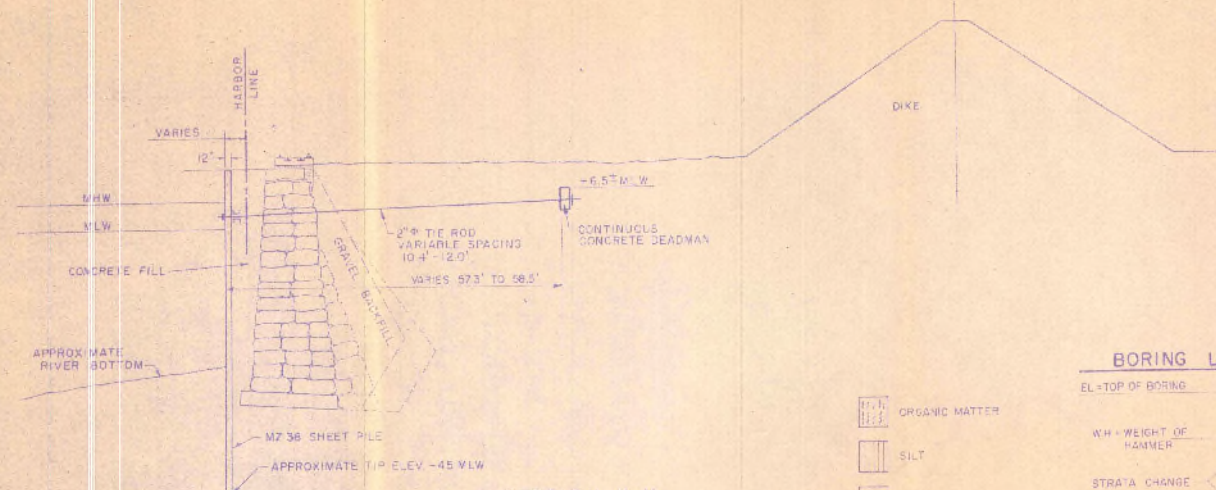
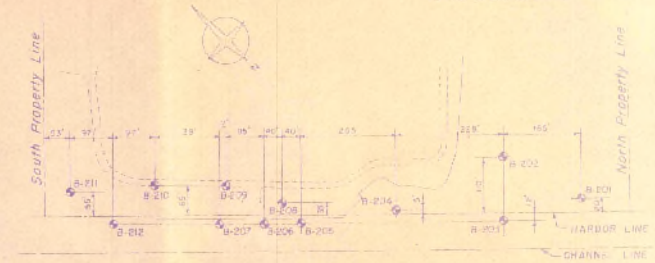
| | | | | |
|----------------------------|-------------------|---------|----------|---------------------------------|
| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR | SURFACE ELEV. |
| At _____ after _____ Hours | Type _____ | _____ | _____ | DATE STARTED _____ |
| At _____ after _____ Hours | Size I.D. _____ | _____ | _____ | DATE COMPL. _____ |
| | Hammer Wt. _____ | _____ | BIT | BORING FOREMAN <u>C. CRATON</u> |
| | Hammer Fall _____ | _____ | _____ | INSPECTOR _____ |
| | | | | SOILS ENGR. _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 7 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 42 | | | | | | | | 44' 6" | | | | |
| 12 | 44' 6" - 46' | D | | 14 | 16 | 20 | WET | | GR. F-C SAND and SILT | 9 | 18 | 12 |
| 10 | 46' - 48' | D | | 20 | 21 | 29 | > 2" | 5HE | 13/1 TUBE | 11 | 24 | 20 |
| 20 | 49' - 50' 6" | D | | 5 | 7 | 8 | | | | 10 | 18 | 14 |
| 21 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 31 | 55' - 56' 6" | D | | 4 | 6 | 9 | WET 11-15 | | | 11 | 18 | 14 |
| 20 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 16 | 60' - 61' 6" | D | | 7 | 6 | 7 | WET 17-15 | 60' | GR. F-C SAND LITTLE M.C GRAVEL TR. SILT | 12 | 18 | 12 |
| 20 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 24 | | | | | | | | 64' | (RUNNING) | | | |
| 54 | | | | | | | | | | | | |
| 32 | 65' - 66' 6" | D | | 19 | 13 | 11 | WET 14-15 | 68' | GR. F-C SAND SILT & GRAVEL LIT FINE SAND | 12 | 14 | 9 |
| 40 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | |
| | 70' - 71' 6" | D | | 50 | 21 | 45 | WET 17-15 | | LITTLE F-C GRAVEL | - | 18 | 0 |
| | 71' 6" - 73' | D | | 26 | 30 | 34 | WET 17-15 | 73' | (TILL) | 14 | 18 | 13 |
| | | | | | | | | | BOTTOM OF BORING | | | |
| | | | | | | | | | 43' | | | |

| | | | | |
|---------------------------------|------------------|---|----------------------|--------------|
| GROUND SURFACE TO | USED | CASING | THEN | SUMMARY |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | Earth Boring |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Cohesive Consistency | Rock Coring |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | 0-4 Soft 30 + Hard | Samples |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | 4-8 M/Stiff | |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | 8-15 Stiff | |
| | | 50+ Very Dense | 15-30 V-Stiff | |

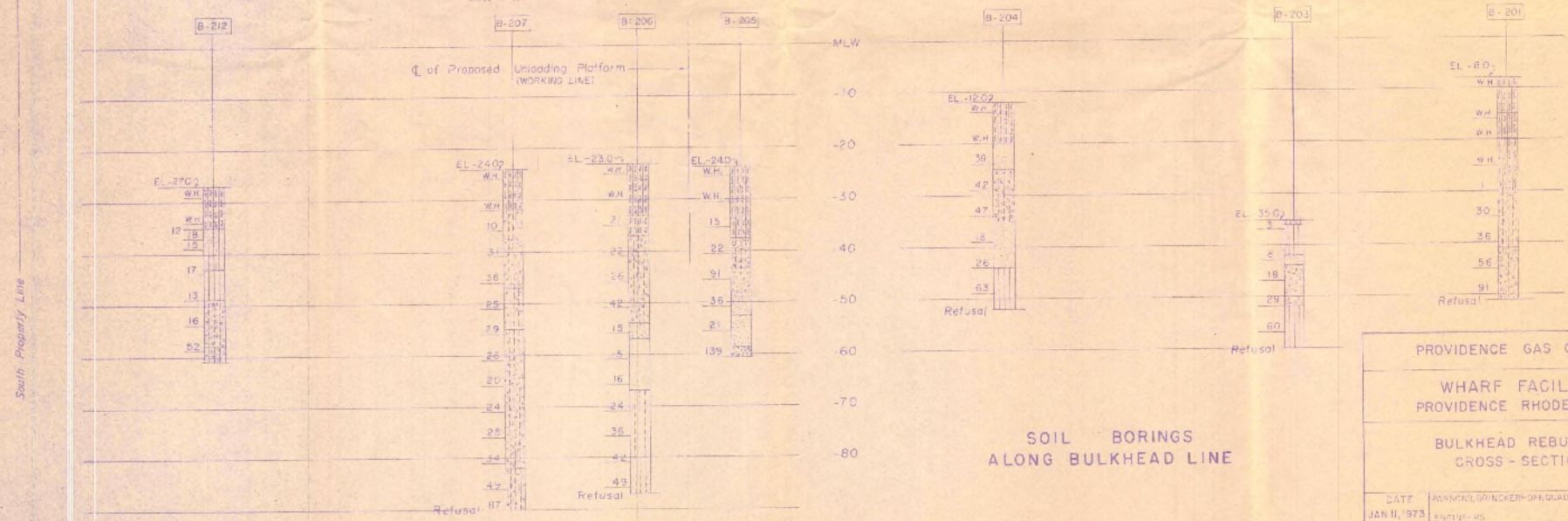
NOTE - COMPLETE BORING LOGS ARE ATTACHED TO THE SPECIFICATIONS



- ORGANIC MATTER
- SILT
- SAND
- GRAVEL

BORING LEGEND

- EL - TOP OF BORING
 - W.H. - WEIGHT OF HAMMER
 - STRATA CHANGE
 - BLOWS ON SAMPLER
- SAMPLES OBTAINED USING 2" SPLIT SPOON SAMPLER DRIVEN 24 INCHES WITH 140 LB. HAMMER, 30 INCH DROP. BLOWS ON SAMPLER WHICH ARE SHOWN ON BORING ARE FOR A 12 INCHES OF DRIVING



PROVIDENCE GAS COMPANY

WHARF FACILITIES
PROVIDENCE RHODE ISLAND

BULKHEAD REBUILDING
CROSS - SECTIONS

| | | |
|--------------|--------------------------------------|------------|
| DATE | PAYNON, BRINKERHOFF, QUAYE & DOUGLAS | DWG. NO. |
| JAN 11, 1973 | ENGINEER | NEW YORK 3 |

D-17

| | |
|---|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 654.42 W 950.53 Groundwater Depth: 7 ft Contractor: American Drilling | Logged by: R.T. DeConto Date Start - Finish: 11/09/95 - 11/09/95 Ground Elevation: 9.704 ft Total Depth Drilled: 52 ft Rig Type: CME-75 |
|---|--|

Methods: **Casing Used:** None
Drilling Soil: 4.25" hollow-stem augers
Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
Drilling Rock: None

Comments: Groundwater depth as noted during drilling. WOR = Weight of Rods.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|---|
| | | Type | No. | | | | |
| 9.7 | 0 | | | | | SP-SM | Posthole to 4'. FILL: Gravelly sand, mostly fine, 10-20% subangular to subrounded gravel to 2 1/2" (some coke), 5-10% nonplastic fines, moist, dark brown, hydrocarbon odor. |
| | 5 | S | 1 | 2-3-2-2 (17.0") | 5 | SP-SM | S-1: Sand, fine to medium, mostly fine, 5-15% slightly plastic fines in pockets, light olive, some black staining, saturated with oil. |
| | | S | 2 | 3-4-8-15 (20.0") | 12 | SP-SM | S-2: Sand, fine to medium, mostly medium, 5-10% slightly plastic fines (mainly in 1-2" pockets), medium dense, mottled (light olive and black), saturated with oil, strong hydrocarbon odor. |
| | | S | 3 | 5-6-11-12 (18.0") | 17 | SP-SM | S-3: Similar to S-2, except 1 shell. |
| | 10 | S | 4 | 5-7-8-9 (22.0") | 15 | SP-SM | S-4: Gravelly sand, coarse to fine, mostly medium to fine, 10-20% subrounded to rounded gravel to 1", 5-10% nonplastic fines, medium dense, wet, light olive with black mottling, hydrocarbon odor. |
| | | S | 5 | 4-6-8-8 (17.0") | 14 | SP | S-5: Sand, poorly graded, coarse to fine, mostly medium to fine, 5-15% subrounded gravel to 1 1/4", <10% nonplastic fines, medium dense, wet, olive gray, slight hydrocarbon odor. |
| | 15 | S | 6 | 0-1-2-1 (9.0") | 3 | SP OL | S-6A (Top 4"): Similar to S-5. S-6B (Bot. 5"): Organic silt, moderately plastic, 5-10% fine to medium sand, soft, moist, brownish gray, hydrocarbon odor. |
| | | S | 7 | 0-1-1-1 | 2 | OL | S-7: Similar to S-6B, except pockets of dark gray, medium to fine sand. |
| | 20 | U | 1 | PUSH (19.0") | | OL | U-1: Organic silt, slightly plastic, 5-10% fine to medium sand, moist, dark olive, shells. |
| | | S | 8 | 0-1-1-1 (18.0") | 2 | OL | S-8: Organic silt, slightly plastic, 5-15% coarse to fine sand, mostly fine sand, very soft to soft, moist, brownish gray, trace organic fibers. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:

- S = Standard split-spoon
- U = Undisturbed tube

| | |
|------------------------|------------------|
| Approved DRB | Date 04/05/96 |
|------------------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------------------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -15 | 25 | S | 9 | WOR-1-2-1 (20.0") | 3 | OL | S-9: Organic silt, moderately plastic, <5% fine sand, soft, moist, dark grayish brown, trace shell fragments, flat piece of shale. Driller noted change in strata between at 28'-29'. |
| -20 | 30 | S | 10 | 20-17-7-10 (10.0") | 24 | SP-SM | S-10: Sand, medium to fine, mostly fine, <5% subrounded gravel to 3/8", 5-10% slightly plastic fines, medium dense, wet, light gray, yellow brown staining. |
| -25 | 35 | S | 11 | 5-6-7-8 (15.0") | 13 | ML | S-11: Silt, slightly plastic, <10% fine sand, stiff, moist to wet, tan with occasional yellow brown mottling. |
| -30 | 40 | U | 2 | PUSH (16.0") | | ML | U-2: Similar to S-11. |
| -30 | 40 | S | 12 | 12-7-5-6 (16.0") | 12 | ML | S-12: Similar to S-11. |
| -35 | 45 | S | 13 | 4-4-4-5 (14.0") | 8 | ML | S-13: Silt, slightly plastic, 10-15% fine sand (mostly in 1-3" lenses), medium stiff to stiff, wet, medium gray, light grayish green in more sandy lenses. |
| -40 | 50 | S | 14 | 4-4-5-6 | 9 | ML | S-14: Similar to S-13. |
| BOTTOM OF BORING AT 52 FEET | | | | | | | |
| -45 | 55 | | | | | | |
| -50 | 60 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 529.20 W 882.80

Groundwater Depth: 10 ft

Contractor: American Drilling

Logged by: R.T. Deconto

Date Start - Finish: 10/24/95 - 10/24/95

Ground Elevation: 10.354 ft

Total Depth Drilled: 72 ft

Rig Type: CME-75

Depth to Bedrock:

Driller: R. Leger

Casing Used: None

Methods:

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|---|
| | | Type | No. | | | | |
| 10.4 | 0 | | | | | | Fill: Sandy gravel, well graded, gravel to 2". 20-30% fine to coarse sand, <10% nonplastic fines, dry, black, hydrocarbon odor. |
| | | S | 1 | 10-12-14-8 | 26 | GW | S-1: No recovery. |
| | | S | 2 | 4-5-5-9 | 10 | SM | S-2: Silty sand, <5% fine gravel, fine to coarse sand, mostly fine, 25-35% nonplastic to slightly plastic fines, loose to medium dense, damp, brown. |
| 5 | 5 | S | 3 | 8-5-3-4 | 8 | SM | S-3: Similar to S-2, except 5-10% fine gravel, loose, mottled (light and dark brown). |
| | | S | 4 | | | | S-4A (Top 6"): Silty sand, 5-10% subangular fine gravel, coarse to fine sand, mostly fine, 10-20% nonplastic to slightly plastic fines, very loose to loose, damp, tan with orange mottling. |
| | | S | 4 | 2-1-3-5 (18.0") | 4 | SM | |
| | | | | | | SP-SM | S-4B (Bot. 12"): Gravelly sand, 10-20% subrounded gravel to 1 1/2", fine to coarse sand mostly fine, 10-15% nonplastic fines, very loose to loose, wet, mottled (gray and light brown). |
| 0 | 10 | S | 5 | 2-3-2-3 | 5 | SP-SM | S-5: Gravelly sand, 15-20% slightly rounded, fine gravel, coarse to fine sand, mostly medium to fine, 5-10% nonplastic fines, loose, wet, gray. |
| | | S | 6 | 4-4-7-7 | 11 | SP-SM | S-6: Sand, widely graded, coarse to fine, mostly medium to fine, 5-10% nonplastic fines, medium dense, wet, gray. |
| | | S | 7 | 5-5-2-1 (14.0") | 7 | SM | S-7: Silty sand, mostly fine, <5% fine gravel to coarse sand, 20-30% nonplastic fines, loose, wet, medium gray; pockets of organic silt, moderately plastic, dark gray, hydrocarbon odor. |
| -5 | 15 | S | 8 | 3-3-4-6 (20.0") | 7 | SP-SM | S-8A (Top 14"): Sand, <5% rounded, fine gravel, coarse to fine sand, mostly medium to fine, 5-10% nonplastic fines, loose, wet, brown, slight hydrocarbon odor; pockets of organic silt, moderately plastic, dark gray. |
| | | | | | | OL | |
| | | S | 9 | 4-6-7-9 (18.0") | 13 | SW-SM | S-8B (Bot. 6"): Organic Silt, slightly to moderately plastic, <5% fine gravel, 5-10% coarse to fine sand, medium gray. |
| | | | | | | | S-9: Gravelly sand, widely graded, 10-15% rounded to subangular gravel to 1 1/4", coarse to fine sand, 5-15% nonplastic fines, medium, dense, wet, brownish gray, slight hydrocarbon odor. |
| -10 | 20 | S | 10 | 3-3-1-1 (8.0") | 4 | SW-SM | S-10: Similar to S-9, except very loose to loose. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRB | Date 04/05/96 |
|-----------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. Deconto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|----------------|---|
| | | Type | No. | | | | |
| -15 | 25 | S | 11 | 17-18-17-15 | 35 | SW-SM | S-11: Gravelly sand, widely graded, 15-20% rounded fine gravel, 5-15% nonplastic fines. dense, wet, brownish gray; 2" rounded piece of gravel in spoon tip. |
| -20 | 30 | S | 12 | 17-21-22-19 | 43 | GW-GM | S-12: Sandy gravel, widely graded, subrounded to max 1 1/4", 15-25% coarse to fine sand, 5-10% nonplastic fines, dense, wet, mottled (dark gray and tan). |
| -25 | 35 | S | 13 | 19-23-15-12 (13.0") | 38 | GW-GM ML | S-13A (Top 7"): Sandy gravel, widely graded, rounded to subrounded to 1 1/2" max., 20-30% coarse to fine sand, mostly coarse to medium, 5-10% nonplastic fines, dense, wet, black, organic odor; transitions quickly to silt. S-13B (Bot. 6"): Silt, nonplastic, <5% medium to fine sand, dense, light brown; pockets of sandy gravel, similar to S-13A. |
| -30 | 40 | S | 14 | 34-24-21-14 | 45 | | S-14: No recovery. |
| | | S | 15 | 7-8-8-15 | 16 | SW-GW | S-15: Gravelly sand, well graded, 30-40% rounded gravel to 1 1/4", coarse to fine, <5% nonplastic fines, medium dense, wet, gray brown, hydrocarbon odor. |
| -35 | 45 | S | 16 | 4-5-11-17 (14.0") | 16 | SP SW-SM | S-16A (Top 6"): Sand, coarse to fine, mostly medium to fine, <5% nonplastic fines, medium dense, dark gray. S-16B (Bot. 8"): Gravelly sand, widely graded, 20-25% rounded gravel to 1", fine to coarse sand, 10-15% nonplastic fines, medium dense, wet, dark gray. |
| -40 | 50 | S | 17 | 8-12-11-12 (20.0") | 23 | SP-SM ML | S-17A (Top 9"): Sand, coarse to fine, mostly medium to fine, 5-15% nonplastic fines, medium dense, dark gray. S-17B (Bot. 11"): Silt, nonplastic, <5% fine to medium sand, medium dense, wet, light brown; 2" sand parting. |
| -45 | 55 | S | 18 | 8-11-9-20 (18.0") | 20 | SP ML | S-18A (Top 10"): Sand, poorly graded, coarse to fine, mostly medium to fine, <5% nonplastic fines, medium dense, wet, olive gray. S-18B (Bot. 8"): Silt, nonplastic, dense, light brown, in contact with black silty gravel (graphite shale). |
| -50 | 60 | S | 19 | 15-18-23-24 (17.0") | 41 | SW-SW GW-GM | S-19A (Top 11"): Gravelly sand, widely graded, 10-20% fine gravel, 5-15% nonplastic fines, dense, wet, olive gray. S-19B (Bot 6"): Sandy gravel, widely graded, subrounded to rounded to 1 1/2" max., 35-45% coarse to fine sand, 5-10% nonplastic fines, dense, wet, dark olive gray. |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: **Fields Point, Providence, RI**

Logged by: **R.T. Deconto**

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|---|
| | | Type | No. | | | | |
| -55 | 65 | S | 20 | 3-5-6-14 (16.0") | 11 | GW-GM SP | S-20A (Top 8"): Similar to S-19B, except 10-15% slightly plastic fines; grades into uniform, fine sand. S-20B (Bot. 8"): Sand, uniform, fine, 5-10% subrounded fine gravel, <5% medium to coarse sand, <5% nonplastic fines, loose, wet, medium gray, hydrocarbon odor. Note: Blow counts may not be reliable due to wash at top of sample. |
| -60 | 70 | S | 21 | 9-11-15- 12 (18.0") | 26 | SP ML | S-21A (Top 8"): Sand, poorly graded, coarse to fine, mostly medium to fine, <5% nonplastic fines, medium dense, wet, dark gray; grades into finer sand with gravel at bottom 2". S-21B (Bot. 10"): Silt, nonplastic, 5-10% fine sand, medium dense, wet, gray. BOTTOM OF BORING AT 72 FEET |
| -65 | 75 | | | | | | |
| -70 | 80 | | | | | | |
| -75 | 85 | | | | | | |
| -80 | 90 | | | | | | |
| -85 | 95 | | | | | | |
| -90 | 100 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRS

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

Client: Algonquin LNG, Inc.

Date Start - Finish: 11/03/95 - 11/03/95

Coordinates: N 613.45 W 868.46

Ground Elevation: 9.95 ft

Groundwater Depth: 7 ft

Depth to Bedrock:

Total Depth Drilled: 72 ft

Contractor: American Drilling

Driller: R. Leger

Rig Type: CME-75

Methods:

Casing Used: None

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling. WOR = Weight of Rods.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|-------------|---|
| | | Type | No. | | | | |
| 9.9 | 0 | | | | | | Augered through asphalt to 2'. |
| | | S | 1 | 3-3-4-4 (24.0") | 7 | SP-SM | S-1A (Top 12"): Gravelly sand, 10-20% subangular to subrounded fine gravel, fine to coarse sand, mostly medium to fine, 5-10% nonplastic fines. loose, damp, mottled dark brown and reddish brown, damp, strong hydrocarbon odor. |
| | | S | 2 | 2-3-4-5 (24.0") | 7 | SP-SM | S-1B (Bot 8"): Sand, 5-10% fine gravel, mostly fine sand, 5-10% nonplastic fines; loose, moist, dark gray. |
| 5 | 5 | | | | | | S-2A (Top 8"): Similar to S-1A. |
| | | S | 3 | 2-4-2-2 (15.0") | 6 | SM | S-2B (Bot. 16"): Similar to S-1B, except hydrocarbon odor. |
| | | S | 4 | WOR/12-1-1 (5.0") | 1 | SM | S-3: Silty sand, 5-10% gravel to 1", mostly fine sand, <5% medium to coarse sand, 10-20% nonplastic to slightly plastic fines, loose, wet, dark gray, hydrocarbon odor. |
| 0 | 10 | | | | | | S-4: Similar to S-3, strong hydrocarbon odor; sample very oily. |
| | | S | 5 | WOR-1-1-1 (24.0") | 2 | SM-ML | S-5: Silty sand, 5-10% subrounded fine gravel, coarse to fine sand, mostly fine, 35-45% nonplastic fines, very loose, wet, light olive, hydrocarbon odor. |
| | | S | 6 | WOR/24 (24.0") | 0 | SP-SM | S-6: Sand, 5-10% fine gravel, coarse to fine sand, mostly medium to fine, 5-10% nonplastic fines, very loose, wet, brown gray. |
| -5 | 15 | | | | | | S-7: Similar to S-5. |
| | | S | 7 | WOR-1-2-2 (4.0") | 3 | SM-ML | |
| | | S | 8 | WOR-2-3-2 (24.0") | 5 | SW-SM ML | S-8A (Top 18"): Gravelly sand, widely graded, 20-30% subrounded gravel to 1 1/4", fine to coarse sand, 5-10% nonplastic fines, loose, wet, olive gray. |
| | | S | 9 | WOR-1-2-2 (18.0") | 3 | SW-SM OL | S-8B (Bot. 6"): Silt, slightly plastic, <5% fine to medium sand, medium stiff, wet, dark olive. |
| -10 | 20 | | | | | | S-9A (Top 6"): Similar to S-8A, except 10-20% fine gravel, very loose, hydrocarbon odor. |
| | | S | 10 | 3-6-8-11 (9.0") | 14 | SM | S-9B (Bot. 12"): Organic silt, slightly to moderately plastic, <5% fine to medium sand, soft, wet, dark olive, shell fragments. |
| | | | | | | | S-10: Silty sand, 5-15% subrounded gravel to 1 1/4", coarse to fine sand mostly fine, 20-30% slightly plastic fines, medium dense, wet, olive gray, trace shells. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:

- S = Standard split-spoon
- U = Undisturbed tube

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|--|
| | | Type | No. | | | | |
| | | S | 11 | 3-8-3-11 (9.0') | 11 | SW-SM | S-11: Gravelly sand, widely graded, 15-25% subrounded gravel to 1 1/4", 5-15% nonplastic fines, medium dense, wet, medium gray, strong hydrocarbon odor. |
| -15 | 25 | S | 12 | 7-8-11-12 (13.0') | 19 | OL SW-SM | S-12A (Top 4"): Similar to S-9B, except 5-15% medium to fine sand, very stiff. S-12B (Bot. 9"): Gravelly sand, widely graded, 25-35% subrounded gravel 5-10% nonplastic fines, medium dense, wet, mottled (medium gray and light brown.) |
| | | S | 13 | 8-6-8-11 (13.0') | 14 | GW | S-13: Sandy gravel, widely graded, subangular to subrounded gravel to 1 1/2", 30-40% fine to coarse sand, 5-10% nonplastic fines (mainly in lenses), medium dense, wet, gray. |
| -20 | 30 | S | 14 | 18-26-28-13 (16.0') | 54 | SP SW | S-14A (Top 4"): Sand, poorly graded, <5% fine gravel, fine to coarse sand mostly medium, <5% nonplastic fines, brown gray. S-14B (Bot. 12"): Gravelly sand, widely graded, 15-25% subrounded to subangular gravel to 1 1/8", fine to coarse sand, 5-10% nonplastic fines (mainly in lenses), very dense, wet, medium olive, hydrocarbon odor and slight ammonia odor. |
| -25 | 35 | S | 15 | 13-10-13-17 (22.0') | 23 | SP-SM ML | S-15A (Top 8"): Gravelly sand, 10-20% subangular to subrounded gravel to 1 1/4", fine to coarse sand, mostly fine to medium, 5-15% slightly plastic fines, medium dense, wet, olive gray; pockets of slightly plastic silt. S-15B (Bot. 14"): Silt, nonplastic to slightly plastic, 5-10% fine sand, medium dense, wet, light brown. |
| -30 | 40 | S | 16 | 7-6-8-15 (19.0') | 14 | SP ML | S-16A (Top 5"): Sand, poorly graded, <10% gravel to 1", coarse to fine sand, mostly medium to fine, medium dense, wet, brown gray. S-16B (Bot. 14"): Similar to S-15B, except fine sand in interbeds, mottled (tan and light brown), slight odor. |
| -35 | 45 | S | 17 | 8-11-10-15 | 21 | SP-SM ML | S-17A (Top 5"): Sand, <5% subrounded fine gravel, coarse to fine sand, mostly medium to fine, 5-15% nonplastic fines, medium dense, wet, gray brown; pockets of nonplastic to slightly plastic silt. S-17B (Bot. 13"): Silt, slightly plastic, 5-10% fine sand interbedded with silt, very stiff, wet, light gray olive and dark gray olive bands. |
| -40 | 50 | S | 18 | 10-9-6-11 (16.0') | 15 | SP-SM ML | S-18A (Top 2"): Similar to S-17A. S-18B (Bot. 14"): Similar to S-17B, except 5-15% fine sand, interbedded with silt. |
| -45 | 55 | S | 19 | 6-8-12-13 (17.0') | 20 | ML SP ML | S-19A (Top 7"): Similar to S-17B, except slightly plastic to nonplastic, 5-15% fine sand interbedded with silt. S-19B (Mid. 3"): Sand, poorly graded, fine to coarse, mostly medium, <5% nonplastic fines, medium dense, wet, light brown gray. S-19C (Bot. 7"): Similar to S-19A. |
| -50 | 60 | S | 20 | 19-18-25-30 (24.0') | 43 | ML-SM | S-20: Interlayered Sandy silt and Silty sand: Sandy silt, nonplastic, 25-45% fine sand, dense, wet, olive gray; and Silty sand, uniform, fine, 25-40% nonplastic fines, light olive gray. |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: **Fields Point, Providence, RI**

Logged by: **R.T. DeConto**

| Elev (ft) | depth (ft) † | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|------------------------------------|-----------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -55 | 65 | S | 21 | 40-28-32-30 | 60 | ML | S-21: Sandy silt, slightly plastic, 10-15% subangular gravel to 1", 30-40% fine sand, <5% medium to coarse sand, hard, wet, mottled (dark and light olive gray). |
| -60 | 70 | S | 22 | 19-21-24-27 | 45 | SM | S-22: Silty sand, uniform, fine, 30-40% slightly plastic fines (mostly in layers), dense, wet, gray. |
| BOTTOM OF BORING AT 72 FEET | | | | | | | |
| -65 | 75 | | | | | | |
| -70 | 80 | | | | | | |
| -75 | 85 | | | | | | |
| -80 | 90 | | | | | | |
| -85 | 95 | | | | | | |
| -90 | 100 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

| | |
|--|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 522.83 W 637.45 Groundwater Depth: Contractor: American Drilling | Logged by: R.T. DeConto Date Start - Finish: 10/23/95 - 10/23/95 Ground Elevation: 10.97 ft Total Depth Drilled: 52 ft Rig Type: CME-75 Driller: R. Leger Depth to Bedrock: Casing Used: None |
|--|--|

Methods:
 Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Comments: Groundwater depth as noted during drilling. WOR = Weight of Rods.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|---|
| | | Type | No. | | | | |
| 11.0 | 0 | | | | | | Augered through FILL (subangular to subrounded gravel to 2") to 2'. |
| | 10 | S | 1 | 4-3-2-3 (14.0") | 5 | | S-1: Fill (gravel). |
| | 5 | S | 2 | 2-3-6-3 (14.0") | 9 | SM | S-2: Silty sand. 10-15% fine gravel. coarse to fine sand, mostly fine. 25-35% slightly plastic fines. loose, damp, dark brown. |
| | 5 | S | 3 | 5-4-3-5 (12.0") | 7 | SM | S-3: Similar to S-2. except 5-10% fine subangular to subrounded gravel, moist, light brown. |
| | | S | 4 | 2-2-2-4 (3.0") | 4 | | S-4: No sample description recorded. |
| | 10 | S | 5 | WOR-1-2-5 (8.0") | 3 | SP-SM | S-5: Gravelly sand, 25-35% subrounded to subangular gravel to 1", coarse to fine sand, mostly medium to fine. 5-15% slightly plastic fines, very loose, saturated soupy, light brown. |
| | 0 | S | 6 | 3-4-3-5 | 7 | | S-6: No description recorded. |
| | 15 | S | 7 | 3-3-4-5 (24.0") | 7 | SP-SM | S-7A (Top 14"): Gravelly sand, 10-20% coarse to fine gravel, coarse to fine sand, mostly medium to fine. 5-10% nonplastic fines, loose, wet, brown. |
| | -5 | S | 8 | 2-1-2-4 (18.0") | 3 | ML | S-7B (Bot 10"): Sandy silt, nonplastic. <5% fine gravel, <5% medium to coarse sand, 20-35% fine sand, loose, wet, gray, trace shells. S-8: Similar to S-7B, except very loose. |
| | 20 | S | 9 | 1-2-6-13 (14.0") | 8 | SW-SM | S-9: Gravelly sand, widely graded, 20-25% rounded gravel to 1 1/2", coarse to fine sand, 5-10% nonplastic fines, loose, wet, dark gray, hydrocarbon odor. |
| -10 | | | | | | | |

Legend/Notes

- Datum is NGVD 1929.
- indicates groundwater level.
- indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
 S = Standard split-spoon
 U = Undisturbed tube

| | |
|--------------|------------------|
| Approved | Date 04/05/96 |
|--------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------------------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -15 | 25 | S | 10 | 5-6-8-12 | 14 | SW-SM | S-10: Gravelly sand, widely graded, 15-25% subrounded fine gravel, 10-15% nonplastic fines, medium dense, wet, dark gray, hydrocarbon odor. |
| -20 | 30 | S | 11 | 7-8-10-14 (24.0") | 18 | SP | S-11: Sand, poorly graded, fine to coarse, mostly medium to fine, <10% nonplastic fines, medium dense, wet, dark gray, slight hydrocarbon odor. |
| -25 | 35 | S | 12 | 11-12-19-19 (24.0") | 31 | SP GW-GM | S-12A (Top 18"): Sand, poorly graded, <5% coarse sand, mostly fine to medium sand, <5% nonplastic fines, medium dense, wet, medium gray. S-12B (Bot. 6"): Sandy gravel, widely graded to 1 1/4" max., subrounded, 25-35% fine to coarse sand, 20-30% slightly plastic fines (mostly in lenses), dense, wet, gray. |
| -30 | 40 | S | 13 | 7-10-11-15 (24.0") | 21 | SP ML | S-13A (Top 8"): Sand, poorly graded, mostly medium to fine, <5% nonplastic fines, medium dense, wet, gray. S-13B (Bot. 16"): Silt, nonplastic to slightly plastic, medium dense, wet, light grayish brown. |
| -35 | 45 | S | 14 | 8-10-11-13 (18.0") | 21 | SP ML | S-14A (Top 6"): Similar to S-13A. S-14B (Bot. 12"): Similar to S-13B, except <5% medium to fine sand. |
| -40 | 50 | S | 15 | 5-10-15-28 (18.0") | 25 | SP SP-SM | S-15A (Top 4"): Similar to S-12A. S-15B (Mid. 4"): Similar to S-14B. S-15C (Bot. 10"): Gravelly sand, 15-25% subrounded fine gravel, coarse to fine sand, mostly fine, 15-20% nonplastic fines, medium dense, wet, tan with ironoxide staining. |
| BOTTOM OF BORING AT 52 FEET | | | | | | | |
| -45 | 55 | | | | | | |
| -50 | 60 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

| | |
|--|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 528.49 W 1078.95 Groundwater Depth: 7 ft Contractor: American Drilling | Logged by: R.T. DeConto Date Start - Finish: 10/26/95 - 10/27/95 Ground Elevation: 9.755 ft Total Depth Drilled: 74 ft Rig Type: CME-75 Driller: R. Leger Casing Used: None |
|--|--|

Methods:
 Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------------|--|
| | | Type | No. | | | | |
| 9.8 | 0 | | | | | SP-SM | FILL: Silty Sand, 10-30% gravel to 1 1/2", fine to coarse sand, mostly fine, 5-10% nonplastic fines, dry, dark brown. |
| | | S | 1 | 4-5-6-8 (9.0") | 11 | SP-SM SM | S-1A (Top 4"): Similar to above, medium dense. S-1B (Bot. 5"): Silty sand, 5-10% subangular gravel to 1 1/2", fine to coarse sand, mostly fine, 10-20% nonplastic fines, medium dense, damp, brown. |
| | 5 | S | 2 | 7-5-4-2 (10.0") | 9 | SP-SM | S-2: Sand, 5-15% fine gravel (some slag), coarse to fine sand, mostly fine, 10-15% nonplastic fines, loose, moist, dark, brown, oily with hydrocarbon odor. |
| | | S | 3 | 7-6-5-5 (4.0") | 11 | SP-SM | S-3: Similar to S-2, except very oily and gray, wet. |
| | | S | 4 | 4-6-4-5 (8.0") | 10 | GW-GM | S-4: Sandy gravel, widely graded, elongate subrounded gravel to 1 1/4", 30-40% mostly fine, sand, 5-10% nonplastic fines, loose, wet, light gray, very oily, strong hydrocarbon odor. |
| | 10 | S | 5 | 3-3-3-5 | 6 | SW-SM | S-5: Gravelly sand, widely graded, 25-30% flat, elongate and subangular to subrounded gravel to 1 1/2", 5-10% nonplastic fines, loose, wet, brown gray, hydrocarbon odor. |
| | | S | 6 | 4-3-4-2 | 7 | SP | S-6: Gravelly sand, poorly graded, 10-20% subrounded gravel to 1 1/2", fine to coarse sand, mostly medium to fine, loose, wet, dark gray, hydrocarbon odor. |
| | 15 | S | 7 | 1-1-1-3 (12.0") | 2 | SP-SM ML | S-7A (Top 4"): Sand, 10-20% fine gravel, coarse to fine sand, mostly fine, 5-10% nonplastic fines, very loose, wet, dark gray, hydrocarbon odor, transitions to fine sand. S-7B (Bot. 8"): Silt, moderately plastic, <5% fine gravel, <5% coarse to fine sand, very soft to soft, wet, black, dilatant, shells. |
| | | S | 8 | 4-6-6-9 (18.0") | 12 | SP-SM ML | S-8A (Top 8"): Sand, <5% gravel to 1 1/2", coarse to fine sand, 5-10% nonplastic fines, medium dense, wet, mottled (light gray and brown); and Silty sand, uniform, fine, 30-40% nonplastic fines, black. S-8B (Bot. 10"): Silt, slightly plastic, <5% sand, stiff, wet, mottled (gray and light brown). |
| | 20 | S | 9 | 5-8-9-9 (14.0") | 17 | SP-SM ML SP-SM | S-9A (Top 2"): Similar to S-7A, except medium dense. S-9B (Mid. 6"): Silt, slightly to nonplastic, medium dense, wet, mottled (brown and olive gray), ironoxide staining, hydrocarbon odor. S-9C (Bot. 6"): Sand, uniform, medium to fine, 5-10% nonplastic fines, medium dense, wet, gray, micaceous. |
| | | S | 10 | 3-5-8-10 (14.0") | 13 | SM ML SP | |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRB | Date 04/05/96 |
|-----------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -15 | 25 | S | 11 | 8-13-11-11 (14.0") | 24 | SW-SM ML | S-10A (Top 7"): Silty sand, widely graded, 5-10% subangular gravel to 3/4", fine to coarse sand, mostly medium, 20-30% nonplastic fines (mostly in lenses), medium dense, wet, dark gray, hydrocarbon odor. S-10B (Mid. 4"): Silt, nonplastic to slightly plastic, 5-15% fine sand, olive gray. S-10C (Bot. 3"): Gravelly sand, widely graded, 10-20 subangular to rounded gravel to 3/4", fine to coarse mostly medium sand, dark gray, oily hydrocarbon odor. S-11A (Top 8"): Sand, widely graded, 5-10% subrounded to subangular fine gravel, 5-15% nonplastic fines, medium dense, wet, mottled (dark and light gray and brown). S-11B (Bot. 6"): Sandy silt, slightly plastic, 10-20% fine sand, very stiff, wet, light brown; pockets of black sandy silt, slightly plastic. |
| -20 | 30 | S | 12 | 7-7-10-13 (12.0") | 17 | SW-SM ML | S-12A (Top 2"): Gravelly sand, widely graded, 10-15% subrounded gravel to 1", fine to coarse sand, 5-10% slightly plastic fines, medium dense, wet, dark olive gray. S-12B (Bot. 10"): Sandy silt, nonplastic to slightly plastic, 10-20% fine sand (mostly in occasional lenses), medium dense, wet, mottled (light olive brown, light red-brown), ammonia odor. |
| -25 | 35 | S | 13 | 5-7-10-16 | 17 | | S-13: No recovery. |
| | | S | 14 | PUSH (12.0") | | SM | S-14: Silty sand, <5% fine gravel, fine to coarse sand, mostly medium to fine, 10-20% nonplastic fines, wet, dark gray; elongate gravel to 2" in spoon, silty on bottom. |
| -30 | 40 | S | 15 | 6-8-7-12 (14.0") | 15 | SM | S-15: Silty sand, uniform, fine, 20-40% nonplastic fines, medium dense, wet, light brown, ammonia odor. |
| -35 | 45 | S | 16 | 8-10-13-16 (20.0") | 23 | SM | S-16: Similar to S-15, except light yellow-brown, one 3/4" subrounded piece of gravel, no odor. |
| -40 | 50 | S | 17 | 8-10-11-14 (12.0") | 21 | SM SP-SM | S-17A (Top 4"): Silty sand, uniform, fine, <5% gravel to 1 1/2", <5% medium to coarse sand, 20-30% nonplastic to slightly plastic fines, medium dense, wet, mottled (yellow brown and gray). S-17B (Bot. 8"): Sand, uniform, fine, 5-10% nonplastic fines, medium dense, wet, dark olive gray to brown, more olive at bottom. |
| -45 | 55 | S | 18 | 8-10-13-16 (14.0") | 23 | SP-SM | S-18: Sand, uniform, fine, 5-10% nonplastic fines, medium dense, wet, olive gray to brown, hydrocarbon odor. |
| -50 | 60 | S | 19 | 17-11-13-16 (15.0") | 24 | SP-SM | S-19: Sand, uniform, fine, 5-15% nonplastic fines, medium dense, wet, olive brown; occasional lenses of dark gray sandy silt. |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRS

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -55 | 65 | S | 20 | 9-12-14-18 (16.0') | 26 | SP-SM | S-20: Sand, uniform, fine to medium, 5-10% nonplastic fines, medium dense, wet, dark olive gray, hydrocarbon odor. Note: Change in strata noted by driller; rig shaking at 68'. |
| -60 | 70 | S | 21 | 27-21-21-22 | 42 | | S-21: No recovery. |
| | | S | 22 | PUSH (8.0') | | SP-SM | S-22: Gravelly sand, 10-20% rounded to subrounded fine gravel, fine to medium sand, mostly fine, 5-15% nonplastic fines, wet, olive gray. BOTTOM OF HOLE AT 74 FEET |
| -65 | 75 | | | | | | |
| -70 | 80 | | | | | | |
| -75 | 85 | | | | | | |
| -80 | 90 | | | | | | |
| -85 | 95 | | | | | | |
| -90 | 100 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|--|
| | | Type | No. | | | | |
| | | S | 10 | 3-3-5-6 (23.0") | 8 | SM | S-10: Silty sand, 5-10% subrounded gravel to 1/2" (more gravel in top 13"), fine to coarse sand, mostly fine, 10-30% slightly plastic organic silt, loose, dark olive. some wood fibers in silt lenses. |
| -15 | 25 | S | 11 | 2-2-4-4 (22.0") | 6 | SM | S-11: Similar to S-10. |
| -20 | 30 | S | 12 | 13-11-16-18 (22.0") | 27 | ML SW ML | S-12A (Top 3"): Organic silt, slightly plastic, 5-10% gravel to 1/2", <5% fine to coarse sand, very stiff, black. S-12B (Mid. 5"): Gravelly sand, widely graded, 20-30% gravel to 1/2", medium dense, dark olive. S-12C (Bot. 12"): Sandy silt, nonplastic, 10-30% fine sand, medium dense, tan. |
| -25 | 35 | S | 13 | 16-15-17-20 (17.0") | 32 | SP SW-SM | S-13A (Top 9"): Sand, poorly graded, fine to medium, mostly fine, <5% nonplastic fines, dense, dark olive gray; slight organic odor. S-13B (Bot. 8"): Gravelly sand, widely graded, subangular gravel to 1 3/4", fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, light brown. |
| -30 | 40 | S | 14 | 15-23-28-20 (4.0") | 51 | GW-GM | S-14: Sandy gravel, widely graded, elongate subangular gravel to 1 1/2", 20-30% mostly fine sand, 5-10% nonplastic fines, very dense, dark olive. |
| -35 | 45 | S | 15 | 4-4-6-8 (14.0") | 10 | SW-SM SP-SM | S-15A (Top 5"): Gravelly sand, widely graded, 25-35% subrounded gravel to 1 1/2", fine to coarse sand, 10-15% slightly plastic fines in pockets, loose to medium dense, brown to dark olive. S-15B (Bot. 9"): Sand, uniform, fine (coarser at bottom of sample), 5-10% nonplastic fines, loose to medium dense, medium olive. |
| -40 | 50 | S | 16 | 11-11-12-11 (2.0") | 23 | SW-SM | S-16: Similar to S-15A. |
| | | S | 17 | 9-11-8-13 (16.0") | 19 | SW-SM SP-SM | S-17A (Top 4"): Gravelly sand, widely graded, 15-20% subangular gravel to 3/4", 10-15% slightly plastic fines, medium dense, medium gray brown. S-17B (Bot. 11"): Sand, uniform, fine, 5-10% nonplastic fines, medium dense, medium olive. |
| -45 | 55 | S | 18 | 16-15-16-18 (15.0") | 31 | SW SM | S-18A (Top 5"): Gravelly sand, well-graded, 15-25% elongate subrounded gravel to 2", fine to coarse sand, mostly fine, <5% nonplastic fines, dense, medium olive gray. S-18B (Bot. 10"): Silty sand, uniform, fine, 10-15% nonplastic fines, dense, medium olive. |
| -50 | 60 | S | 19 | 14-19-24-25 (14.0") | 43 | SP-SM | S-19: Sand, 5-10% subangular gravel to 1", fine to coarse sand, mostly fine, 5-10% nonplastic fines in pockets, dense, medium olive with darker bands. |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------------------------|---------------|--------|-----|--------------------------------|-------------------|----------------|--|
| | | Type | No. | | | | |
| -55 | 65 | S | 20 | 18-19-22- 24 (2.0") | 41 | SP-SM | S-20: Sand, <5% subrounded gravel to 1/2". fine to coarse sand, mostly fine, 5-15% slightly plastic fines, dense, dark olive. |
| -60 | 70 | S | 21 | 6-9-13-14 (11.0") | 22 | SP-SM SW-SM | S-21A (Top 4"): Similar to S-20, except mostly medium sand, slight hydrocarbon odor. S-21B (Bot. 7"): Gravelly sand, widely graded, 20-30% subrounded gravel to 1". fine to coarse sand, 5-10% nonplastic fines, medium dense, gray, slight hydrocarbon odor. |
| BOTTOM OF BORING AT 72 FEET | | | | | | | |
| -65 | 75 | | | | | | |
| -70 | 80 | | | | | | |
| -75 | 85 | | | | | | |
| -80 | 90 | | | | | | |
| -85 | 95 | | | | | | |
| -90 | 100 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

| | |
|---|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 287.65 W 397.92 Groundwater Depth: 7 ft Contractor: American Drilling | Logged by: A.C. Smith Date Start - Finish: 11/06/95 - 11/06/95 Ground Elevation: 10.251 ft Total Depth Drilled: 9 ft Rig Type: CME-75 |
|---|--|

Methods: Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Casing Used: None

Comments: Moved approximately 40' south to avoid apparent concrete slab from former building #10. Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|--|
| | | Type | No. | | | | |
| 10.3 | 0 | | | | | | 0-1.5': Pea gravel and coarse sand. 0.5'-3.5': Silty sand, widely graded, 5-15% gravel, 5-15% nonplastic fines, dark brown. |
| | 5 | S | 1 | 12-5-2-2 (12.0") | 7 | | S-1A (Top 5"): Similar to above. S-1B (Bot. 7"): Broken brick and concrete. |
| | 5 | S | 2 | 8-8-12-16 (10.0") | 20 | | S-2: Broken brick and concrete. |
| | 10 | S | 3 | 7-6-5/5* (9.0") | > 11 | | S-3A (Top 4"): Similar to S-2. S-3B (Bot. 5"): Wood. |
| | 10 | | | | | | Hit obstruction at 9 feet: appears to be old concrete floor of building #10. Moved 3 feet north, hit obstruction at 9 feet. Moved 25 and 30 feet south, hit obstruction. Moved 40 feet south and continued drilling. |
| | 15 | | | | | | |
| | 20 | | | | | | |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- (') = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
 S = Standard split-spoon

| | |
|--------------|------------------|
| Approved | Date 04/05/96 |
|--------------|------------------|

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 327.65 W 397.92

Groundwater Depth:

Contractor: American Drilling

Logged by: A.C. Smith

Date Start - Finish: 11/06/95 - 11/06/95

Ground Elevation: 10.251 ft

Total Depth Drilled: 62 ft

Rig Type: CME-75

Depth to Bedrock:

Driller: R. Leger

Casing Used: None

Methods:

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during sampling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| 10.3 | 0 | | | | | | |
| | 5 | | | | | | |
| | 10 | S | 4 | 3-3-6-7 (11.0") | 9 | GP-GM | S-4: Sandy gravel, subrounded, fine, 30-40% coarse to fine sand, 5-15% slightly plastic fines, loose, gray-brown, strong hydrocarbon odor. |
| | 15 | S | 5 | 12-14-7-8 (5.0") | 21 | GP-GM | S-5: Similar to S-4, except medium dense. |
| | 20 | S | 6 | 2-2-7-9 (12.0") | 9 | GP-GM | S-6: Similar to S-4. |
| | 25 | S | 7 | 7-8-13-20 (12.0") | 21 | GP-GM | S-7: Similar to S-4, except medium dense. |
| | 30 | S | 8 | 8-7-9-11 (16.0") | 16 | GM ML-GP | S-8A (Top 2"): Similar to S-4. S-8B (Bot. 14"): Silt, nonplastic, 15-25% fine sand, medium dense, brown; one slightly plastic layer 2" thick. |
| -10 | 35 | S | 9 | 6-5-6-8 (16.0") | 11 | SP-SM ML | S-9A (Top 10"): Sand, medium to fine, 5-10% nonplastic fines, medium dense, brown. S-9B (Bot. 6"): Silt, nonplastic, 15-25% fine sand, medium dense, brown. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:

S = Standard split-spoon

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: A.C. Smith

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N V a l u e | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-----------------------------------|---------------|--|
| | | Type | No. | | | | |
| -15 | 25 | S | 10 | 5-7-7-7 (16.0') | 14 | ML | S-10: Silt, nonplastic, 15-25% fine sand, medium dense, brown. |
| -20 | 30 | S | 11 | 5-6-6-9 (18.0') | 12 | ML | S-11: Similar to S-10. |
| -25 | 35 | S | 12 | 20-16-14-12 (11.0') | 30 | SP-SM | S-12A (Top 1"): Similar to S-10. S-12B (Bot. 15"): Gravelly sand, widely graded, 15-25% fine gravel, 5-15% nonplastic fines, medium dense, gray. |
| -30 | 40 | S | 13 | 7-10-13-19 (11.0') | 23 | SP | S-13: Sand, medium to fine, <10% nonplastic fines, medium dense, gray. |
| -35 | 45 | S | 14 | 19-14-23-25 (14.0') | 37 | SM SW-SM | S-14A (Top 10"): Silty sand, fine, 10-20% nonplastic fines, dense, brown. S-14B (Bot. 4"): Gravelly sand, widely graded, 35-45% fine gravel, 5-15% nonplastic fines, dense, gray. |
| | | | | | | | Note: Very gravelly while augering from 47 to 50 feet. |
| -40 | 50 | S | 15 | 28-32-36-42 (20.0') | 68 | SW | S-15: Gravelly sand, widely graded, 35-45% fine gravel, <10% nonplastic fines, very dense, gray. |
| -45 | 55 | S | 16 | 37-38-44-45 (17.0') | 82 | SW | S-16: Similar to S-15. |
| -50 | 60 | S | 17 | 28-17-14-22 | 31 | SW | S-17: Similar to S-15. |

BOTTOM OF BORING AT 62 FEET

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 356.88 W 938.96

Groundwater Depth: 7 ft

Contractor: American Drilling

Logged by: R.T. DeConto

Date Start - Finish: 10/25/95 - 10/25/95

Ground Elevation: 10.693 ft

Total Depth Drilled: 62 ft

Rig Type: CME-75

Depth to Bedrock:

Driller: R. Leger

Casing Used: None

Methods:

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|---|
| | | Type | No. | | | | |
| 10.7 | 0 | | | | | | Augered to 4'. Fill: Gravelly sand, widely graded, 10-20% subrounded gravel to 2", fine to medium sand, mostly fine, 10-15% nonplastic fines, loose, damp, dark brown, organics. |
| 10 | | | | | | | |
| | 5 | S | 1 | 6-1-7-3 | 8 | SM | S-1: Silty sand, widely graded, 10-15% subangular gravel to 3/4". 10-20% nonplastic fines, loose, damp, tan and orange mottled, wood on bottom of spoon tip. |
| | | S | 2 | 3-2-3-4 (14.0") | 5 | SM | S-2: Silty sand, widely graded, 5-10% subangular gravel, coarse to fine sand, mostly fine, 10-15% nonplastic fines, loose, saturated, tan, becomes oily and black at bottom 10". |
| | | S | 3 | 2-3-3-5 (14.0") | 6 | SP-SM | S-3: Sand, uniform, fine, 5-10% nonplastic fines (more silt at bottom of sample), loose, black; worm borrows; wood fibers at top of sample; oily top 4" of sample, organic odor. |
| | 10 | S | 4 | 2-3-4-7 (18.0") | 7 | SM | S-4: Silty sand, uniform, fine, 10-15% nonplastic fines, loose, dark olive to black; occasional silt lenses to 2"; organic odor, possibly hydrocarbons. |
| | | S | 5 | 8-7-8-9 (16.0") | 15 | SM | S-5A (Top 4"): Similar to S-4, except medium dense, oily and strong hydrocarbon odor. S-5B (Bot. 12"): Silty sand, uniform, fine, 10-20% nonplastic fines, medium dense, tan. |
| | 15 | S | 6 | 8-8-9-10 (19.0") | 17 | ML | S-6: Sandy silt, nonplastic, 10-20% fine sand, medium dense, tan, wood fibers on top of sample, hydrocarbon odor. |
| | | S | 7 | 9-10-10-10 (17.0") | 20 | SM | S-7: Similar to S-5B, except 20-30% nonplastic fines, becoming more silty towards bottom of sample. |
| | | S | 8 | 3-5-5-9 (14.0") | 10 | SM | S-8: Silty sand, uniform, fine, 10-20% nonplastic fines, loose, to medium dense, light brown. |
| | 20 | S | 9 | 5-7-8-13 | 15 | SM | S-9: Silty sand, uniform, fine, 10-30% nonplastic fines, medium dense, light gray brown, becomes more silty towards bottom of sample, trace organic matter. |
| -10 | | | | | | | |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

Approved
DJB

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|---|
| | | Type | No. | | | | |
| -15 | 25 | S | 10 | 3-4-9-10 (16.0') | 13 | SP-SM | S-10: Sand, rounded to subrounded, fine to medium, mostly medium, 5-10% nonplastic fines, medium dense, black due to oily coating, possible hydrocarbons (strong odor). |
| -20 | 30 | S | 11 | 5-8-13-14 (15.0') | 21 | SP | S-11: Sand, poorly graded, rounded to subrounded, fine to medium, mostly medium, <5% nonplastic fines, medium dense, dark olive gray, hydrocarbon odor. |
| -25 | 35 | S | 12 | 6-8-12-14 (14.0') | 20 | SP-SM | S-12: Sand, uniform, subrounded to rounded, fine, 5-10% nonplastic fines, medium dense, dark olive gray, hydrocarbon odor; becomes more silty at bottom of sample. |
| -30 | 40 | S | 13 | 24-32-37-23 (14.0') | 69 | SP-SM GW-GM | S-13A (Top 6"): Similar to S-12. S-13B (Bot. 8"): Sandy gravel, widely graded, subangular to subrounded gravel to 1 1/2", 10-20% fine to coarse sand, 10-20% slightly plastic fines (mainly in pockets), very dense, mottled (dark gray green and orange). |
| -35 | 45 | S | 14 | 21-27-30-33 (14.0') | 57 | GW-GM | S-14: Sandy gravel, widely graded, subangular to subrounded to 1 1/2", 15-20% fine to coarse sand, mostly fine, 10-15% slightly plastic fines (mainly in pockets), very dense, dark olive gray with orange iron oxide staining. |
| -40 | 50 | S | 15 | 17-11-13-16 | 24 | SP-SM | S-15: Gravelly sand, widely graded, subangular to subrounded and flat gravel to 1", fine to coarse sand, mainly fine, 5-10% nonplastic fines, medium dense, light yellow brown, hydrocarbon odor. |
| -45 | 55 | S | 16 | 10-17-9-8 (6.0') | 26 | SP-SM | S-16: Similar to S-15, except gray olive. |
| | | S | 17 | 5-7-9-13 | 16 | | S-17: No recovery. |
| -50 | 60 | S | 18 | 4-6-12-15 | 18 | | S-18: No recovery. |

BOTTOM OF BORING AT 62 FEET

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 326.35 W 738.33

Groundwater Depth:

Contractor: American Drilling

Depth to Bedrock:

Driller: R. Leger

Logged by: A.C. Smith

Date Start - Finish: 10/19/95 - 10/19/95

Ground Elevation: 11.978 ft

Total Depth Drilled: 18 ft

Rig Type: CME-75

Methods:

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Casing Used: None

Comments: Observation well installed by resource. Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------------------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| 12.0 | 0 | | | | | | |
| | 10 | S | 1 | 17-24-28-26 (14.0") | 52 | SW-SM | S-1: Gravelly sand, widely graded, 20-30% subangular gravel to 1.5", 5-15% nonplastic fines, very dense, damp, brown. |
| | 5 | S | 2 | 10-16-17-19 (5.0") | 33 | SW-SM | S-2: Similar to S-1, except dense. |
| | 5 | S | 3 | 20-28-17-15 (8.0") | 45 | SW-SM | S-3: Similar to S-1, except dense. |
| | 10 | S | 4 | 8-10-11-11 (10.0") | 21 | GP-GM | S-4: Sandy gravel, subrounded to 1", 10-20% fine to coarse sand, 5-10% nonplastic fines, medium dense, saturated, brown. |
| | 0 | S | 5 | 5-8-10-13 (9.0") | 18 | GP-GM | S-5: Similar to S-4. |
| | 15 | S | 6 | 9-10-13-13 (11.0") | 23 | GP-GM | S-6: Similar to S-4. |
| | 5 | S | 7 | 5-8-9-9 (5.0") | 17 | SW-SM | S-7: Gravelly sand, widely graded, 10-20% subrounded gravel to 1.5", fine to coarse sand, 5-15% nonplastic fines, medium dense, brown. |
| | 20 | S | 8 | 8-12-9-11 (10.0") | 21 | SW-SM | S-8: Similar to S-7. |
| BOTTOM OF BORING AT 18 FEET | | | | | | | |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRB | Date 04/05/96 |
|-----------------|------------------|

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 326.35 W 741.33

Groundwater Depth:

Contractor: American Drilling

Logged by: A.C. Smith

Date Start - Finish: 10/20/95 - 10/20/95

Ground Elevation: 11.978 ft

Depth to Bedrock:

Driller: R. Leger

Total Depth Drilled: 42 ft

Rig Type: CME-75

Methods:

Casing Used: None

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Moved 3 ft. east of SWBL-11. Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|---|
| | | Type | No. | | | | |
| 12.0 | 0 | | | | | | |
| 10 | | | | | | | |
| 5 | | | | | | | |
| 5 | | | | | | | |
| 10 | | | | | | | |
| 0 | | | | | | | |
| 15 | | | | | | | |
| -5 | | | | | | | |
| 20 | | S | 9 | S-8-9-14 (5.0') | 17 | SW-SM | S-9: Gravelly sand, widely graded, 10-20% subrounded fine gravel, fine to coarse sand, 5-15% nonplastic fines, medium dense, saturated, brown-gray. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRS | Date 04/05/96 |
|-----------------|------------------|

Site: Fields Point, Providence, RI

Logged by: A.C. Smith

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N V u _c | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|---------------------------------|---------------|---|
| | | Type | No. | | | | |
| -10 | | | | | | | |
| | 25 | S | 10 | 32-21-13-15 (11.0") | 34 | | S-10: Similar to S-9, except dense. |
| -15 | | | | | | | |
| | 30 | S | 11 | 4-6-6-8 (12.0") | 12 | SM-ML | S-11: Silty sand, uniform, fine, 40-50% nonplastic fines, medium dense; stratified with sandy silt, nonplastic, 40-50% fine sand, brown and gray. |
| -20 | | | | | | | |
| | 35 | S | 12 | 4-8-12-13 (17.0") | 20 | SM | S-12: Silty sand, uniform, fine, 35-50% nonplastic fines, medium dense, brown; 2 1/4" thick layers of clay separated by a 1 1/2" silt layer. |
| -25 | | | | | | | |
| | 40 | S | 13 | 2-6-8-12 (16.0") | 14 | | S-13: Silty sand, uniform, fine, medium dense, brown; stratified with nonplastic silt layers to 1". |
| -30 | | | | | | | |
| | | | | | | | BOTTOM OF BORING AT 42 FEET |
| -35 | | | | | | | |
| | 45 | | | | | | |
| -40 | | | | | | | |
| | 50 | | | | | | |
| -45 | | | | | | | |
| | 55 | | | | | | |
| -50 | | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRS

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: A.C. Smith

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|---|
| | | Type | No. | | | | |
| -10 | | S | 10 | 5-8-8-8 (22.0') | 16 | SP | S-10: Similar to S-9C, except medium dense. |
| 25 | | S | 11 | 4-5-6-9 (12.0') | 11 | SP SW-SM | S-11A (Top 8"): Similar to S-10. S-11B (Bot. 4"): Gravelly sand, 5-15% subrounded fine gravel, fine to coarse sand, 5-15% nonplastic fines, medium dense, wet, brown. Note: Gravelly between 27'-30'. |
| -15 | | | | | | | |
| 30 | | S | 12 | 4-11-15-20 (20.0') | 26 | SP-SM | S-12: Sand, <5% fine gravel, fine to medium sand, 5-10% nonplastic fines, medium dense, wet, black; 3" thick layer of silty sand, uniform, fine, 10-20% nonplastic fines. |
| -20 | | | | | | | |
| 35 | | S | 13 | 8-11-21-22 (18.0') | 32 | SP-SM SM | S-13A (Top 12"): Similar to S-12, except dense. S-13B (Bot. 6"): Silty sand, uniform, fine, 15-25% nonplastic fines, dense, wet, gray-brown. |
| -25 | | | | | | | |
| 40 | | S | 14 | 6-12-14-18 (24.0') | 26 | SP | S-14: Sand, poorly graded, mostly fine to medium, <5% nonplastic fines, medium dense, wet, brown. |
| -30 | | | | | | | |
| 45 | | S | 15 | 9-9-12-19 (16.0') | 21 | SM | S-15: Silty sand, uniform, fine, 15-25% nonplastic fines, medium dense, wet, brown. |
| -35 | | | | | | | |
| 50 | | S | 16 | 10-12-14-16 | 26 | SM | S-16: Similar to S-15. |
| -40 | | | | | | | |
| | | | | | | | BOTTOM OF BORING AT 52 FEET |
| 55 | | | | | | | |
| -45 | | | | | | | |
| 60 | | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 419.28 W 1094.88

Groundwater Depth:

Depth to Bedrock:

Contractor: American Drilling

Driller: R. Leger

Logged by: R.T. DeConto

Date Start - Finish: 11/02/95 - 11/02/95

Ground Elevation: 10.47 ft

Total Depth Drilled: 52 ft

Rig Type: CME-75

Methods:

Casing Used: None

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|----------------|--|
| | | Type | No. | | | | |
| 10.5 | 0 | | | | | | Post hole to 4", FILL. |
| 10 | | | | | | | |
| | 5 | S | 1 | 4-3-2-2 (14.0") | 5 | SW-SM | S-1: Gravelly sand, widely graded, 10-20% subangular gravel to 3/4". fine to coarse sand, 5-10% nonplastic fines, loose, damp, light brown, some roots, slight hydrocarbon odor, dark oily band at bottom of sample. |
| | | S | 2 | 3-4-4-6 (12.0") | 8 | SW-SM | S-2: Similar to S-1, except very oily, strong hydrocarbon odor, light gray bottom 4" of sample. |
| | | S | 3 | 4-4-5-7 (16.0") | 9 | SW-SM SP-SM | S-3A (Top 4"): Similar to S-2. S-3B (Bot. 12"): Silty sand, uniform, fine, 10-15% nonplastic fines, loose, light gray, very oily, hydrocarbon odor. Did not collect sample, too oily. |
| 0 | 10 | S | 4 | 6-7-9-11 (17.0") | 16 | SP-SM | S-4: Sand, uniform, fine, <5% subrounded gravel to 1 1/2" (shale), 5-10% nonplastic fines, medium dense, gray brown, very oily, strong hydrocarbon odor. |
| | | S | 5 | 9-11-14-15 (15.0") | 25 | SW-SM GW-GM | S-5A (Top 6"): Sand, fine to coarse, 5-10% nonplastic fines in lenses, medium dense, brown. S-5B (Bot. 9"): Sandy gravel, widely graded, subangular to subrounded to 1 1/2", fine to coarse sand, 5-15% nonplastic fines, medium dense, brown, strong hydrocarbon odor. |
| | 15 | S | 6 | 7-8-10-15 (8.0") | 18 | SP | S-6: Sand, poorly graded, 5-10% subrounded gravel to 1", fine to medium sand, mostly medium, medium brown, hydrocarbon odor. |
| -5 | | S | 7 | 15-9-6-4 (18.0") | 15 | SP | S-7: Similar to S-6. |
| | | S | 8 | 16-16-14-16 (1.0") | 30 | SP | S-8: Sandy gravel, similar to S-5B. |
| -10 | 20 | S | 9 | 20-16-9-8 (5.0") | 25 | GP-GM | S-9: Sandy gravel, poorly graded, flat, subrounded gravel to 1 1/4", 15-20%, fine to coarse sand, 5-10% nonplastic fines, medium dense, light brown and black, hydrocarbon odor. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:

S = Standard split-spoon

Approved

DRB

Date

04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|---|
| | | Type | No. | | | | |
| | | S | 10 | 9-7-7-8 (13.0") | 14 | SP-SM ML | S-10A (Top 9"): Sand, fine to coarse, mostly medium, 5-10% nonplastic fines, medium dense, black. S-10B (Bot. 4"): Silt, slightly plastic, 10-20% fine sand, stiff, tan, hydrocarbon odor. S-11: No recovery. |
| | 25 | S | 11 | 7-10-10-12 | 20 | | |
| -15 | | S | 12 | 9-11-12-2 | 23 | | S-12: No recovery; 2" rounded cobble fragment in spoon tip. Note: Auger through cobbles and gravel from 24' to 28'. |
| | | S | 13 | 5-7-8-8 (18.0") | 15 | SP-SM ML | S-13A (Top 7"): Sand, fine to medium, mostly medium, 5-10% nonplastic fines, medium dense, medium olive, hydrocarbon odor. |
| -20 | 30 | S | 14 | 9-9-10-14 (16.0") | 19 | ML | S-13B (Bot. 11"): Sandy silt, nonplastic, 10-20% fine sand (mostly in lenses), stiff to very stiff, light olive, hydrocarbon odor. S-14: Similar to S-13B; fine sand interbedded in 1-2" layers. |
| | | S | 15 | 10-12-14-14 (5.0") | 26 | SP-SM | S-15: Sand, fine to coarse, mostly fine, 5-10% nonplastic fines, medium dense, light olive, slight hydrocarbon odor; coarser sand in lenses. |
| -25 | 35 | S | 16 | 10-13-15-18 | 28 | ML | S-16: Silt, slightly plastic, 5-10% fine sand, medium dense, light olive with black lenses, slight hydrocarbon odor. |
| | | S | 17 | 6-9-10-11 (20.0") | 19 | ML | S-17: Silt, slightly plastic, 5-10% fine sand in lenses, very stiff, light gray brown, slight hydrocarbon odor. |
| -30 | 40 | S | 18 | 6-7-9-12 (16.0") | 16 | SP-ML | S-18: Sand, uniform, fine, 5-10% nonplastic fines, medium dense, light olive with occasional black lenses, slight hydrocarbon odor; trace gravel at top of sample. |
| | | | | | | | BOTTOM OF BORING AT 52 FEET |
| -35 | 45 | | | | | | |
| | | | | | | | |
| -40 | 50 | | | | | | |
| | | | | | | | |
| -45 | 55 | | | | | | |
| | | | | | | | |
| -50 | 60 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

| | |
|--|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 328.47 W 650.69 Groundwater Depth: 11 ft Contractor: American Drilling | Logged by: R.T DeConto Date Start - Finish: 10/27/95 - 10/27/95 Ground Elevation: 11.945 ft Total Depth Drilled: 52 ft Driller: R. Leger Rig Type: CME-75 |
|--|--|

Methods: **Casing Used:** None

Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|------------------------|-------------|-------------|---|
| | | Type | No. | | | | |
| 11.9 | 0 | | | | | | Augered to 2'. Fill: Gravelly sand, poorly graded, gravel to 3", fine to coarse sand, mostly fine, dark brown, 4" piece of wood fiber. |
| | 10 | S | 1 | 7-13-6-3 (14.0") | 19 | SW-SM | S-1: Gravelly sand, widely graded, subangular gravel to 1" (coal slag), fine to coarse sand, 5-10% nonplastic fines, dark brown, dry wood and concrete in spoon tip. Note: Augered through concrete rubble from 4-5'. |
| | 5 | S | 2 | 8-10 (6.0") | | SW-SM | S-2: Similar to S-1, except 30-40% gravel. |
| | 5 | S | 3 | 22-43-50-72 (16.0") | 93 | GP-GM | S-3: Sandy gravel, subangular to subrounded gravel to 1 1/2" (slag and concrete), 20-30% fine to coarse sand, mostly fine, 10-15% nonplastic fines, very dense, damp, dark brown; wood fibers, ammonia odor. High blow counts due to 3" concrete fragment. |
| | 10 | S | 4 | 13-44-62-84 (18.0") | 106 | SW-SM | S-4: Gravelly sand, widely graded, subangular gravel to 1 1/8" max., fine to coarse sand, 5-10% nonplastic fines, very dense, damp, dark brown. |
| | 0 | S | 5 | 24-38-26-30 (18.0") | 64 | SP-SM | S-5: Gravelly sand, subangular to subrounded gravel to 1 1/4" max., fine to coarse sand, mostly fine, 5-15% slightly plastic fines, very dense, wet, dark brown; wood fibers, oily, ammonia odor. |
| | 0 | S | 6 | 13-14-21-24 (19.0") | 35 | GW-GM | S-6: Sandy gravel, widely graded, subrounded to rounded, 30-40% fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, wet, dark brown; top 16" are oily, bottom 3" are yellow brown (possibly natural). |
| | 15 | S | 7 | 3-7-8-9 (12.0") | 15 | GW-GM | S-7: Sandy gravel, widely graded, subangular to subrounded to 1 1/2" (elongate and flat granitic shales), 30-40% fine to coarse sand, 5-15% nonplastic to slightly plastic fines, medium dense, wet, yellow brown to olive; slight ammonia odor, wood fibers. |
| | -5 | S | 8 | 11-16-17-24 (18.0") | 33 | SW | S-8: Gravelly sand, well-graded, subangular to rounded, generally elongate gravel to 1" max., fine to coarse sand, dense, wet, dark brown. |
| | 20 | S | 9 | 33-28-28-25 (19.0") | 56 | SP GW-GM | S-9A (Top 5"): Sand, uniform, medium, <5% nonplastic fines, very dense, wet, dark brown. S-9B (Bot. 12"): Similar to S-7, except very dense. |
| | 20 | S | 10 | 13-23-26-28 (16.0") | 49 | GW-GM | S-10: Sandy gravel, widely graded, subangular to 1" (mainly elongate), fine to coarse sand, mostly coarse, 5-10% slightly plastic fines, dense, wet, light yellow-red and brown-gray; fines occur in pockets, binding gravel. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

| | |
|------------------------|------------------|
| Approved <i>DRB</i> | Date 04/05/96 |
|------------------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T DeConto

| Elev (ft) | depth (ft) | Sample | | Blows of Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|---|
| | | Type | No. | | | | |
| -10 | | S | 11 | 14-26-36-39 (20.0") | 62 | SP-SM GW-GM | S-11A (Top 10"): Sand, 5-10% subrounded gravel to 3/4" max., fine to coarse sand, mostly medium, 5-10% nonplastic fines, very dense, wet, dark brown. S-11B (Bot. 10"): Similar to S-10, except very dense, medium olive brown. |
| 25 | | S | 12 | 24-26-26-28 (15.0") | 52 | GW-GM SP | S-12A (Top 4"): Similar to S-11B. S-12B (Bot. 11"): Sand, poorly graded, 10-15% elongate rounded gravel to 3/4", fine to coarse sand, mostly fine, very dense, wet, dark brown, hydrocarbon odor. |
| -15 | | | | | | | |
| 30 | | S | 13 | 21-26-32-38 (17.0") | 58 | SP GW-GM | S-13A (Top 8"): Sand, uniform, fine, <5% nonplastic fines, very dense, wet, medium brown; micaceous, slight hydrocarbon odor. S-13B (Bot. 9"): Sandy gravel, widely graded, subangular to 1 3/4", fine to coarse sand, mostly fine, 5-15% nonplastic fines, very dense, wet, mottled (gray and black). |
| -20 | | | | | | | |
| 35 | | S | 14 | 12-10-10-11 (12.0") | 20 | SW-SM | S-14: Gravelly sand, widely graded, 25-35% subangular to subrounded gravel to 1 1/4", fine to coarse sand, mostly coarse, 5-10% nonplastic fines, medium dense, wet, dark olive gray. |
| -25 | | | | | | | |
| 40 | | S | 15 | 27-26-18-24 (20.0") | 44 | SP SW-SM | S-15A (Top 5"): Sand, poorly graded, <5% fine gravel, fine to coarse sand, mostly medium, <5% nonplastic fines, dense, wet, dark brown. S-15B (Bot. 15"): Gravelly sand, widely graded, subangular to subrounded gravel to 1 1/4", fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, wet, mottled (dark gray and medium olive). |
| -30 | | | | | | | |
| 45 | | S | 16 | 14-19-24-36 (16.0") | 43 | SP GW-GM | S-16A (Top 7"): Similar to S-15A, except no gravel, fine to medium sand, mostly fine, hydrocarbon odor. S-16B (Bot. 19"): Sandy gravel, widely graded, subangular to subrounded to 1 1/2", 25-35% fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, wet, mottled (gray and black), hydrocarbon odor. |
| -35 | | | | | | | |
| 50 | | S | 17 | 11-10-15-18 (16.0") | 25 | SP | S-17A (Top 6"): Similar to S-16A, except medium dense, grades into sandy gravel. S-17B (Bot. 10"): Sandy gravel, widely graded, angular to subangular platy to 1 1/2", 15-25% fine to coarse sand, 5-15% slightly plastic fines, medium dense, wet, gray to black; appears oily but may be organic fines. |
| -40 | | | | | | | |
| 55 | | | | | | | BOTTOM OF BORING AT 52 FEET |
| -45 | | | | | | | |
| 60 | | | | | | | |
| -50 | | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Stone & Webster
Engineering Corporation

BORING LOG

Boring SWBL-15
J.O. 05885.20
Sheet 1 of 2

Site: Fields Point, Providence, RI

Logged by: A.C. Smith

Client: Algonquin LNG, Inc.

Date Start - Finish: 10/19/95 - 10/19/95

Coordinates: N 219.53 W 949.26

Ground Elevation: 12.089 ft

Groundwater Depth:

Depth to Bedrock:

Total Depth Drilled: 52 ft

Contractor: American Drilling

Driller: R. Leger

Rig Type: CME-75

Methods:

Casing Used: None

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N V a l u e | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-----------------------------------|----------------------|---|
| | | Type | No. | | | | |
| 12.1 | 0 | | | | | | |
| | 10 | S | 1 | 9-9-8-14 (22.0") | 17 | SM | S-1: Silty sand, uniform, fine, 5-15% nonplastic fines, medium dense, damp, light brown. |
| | 5 | S | 2 | 4-5-7-12 (24.0") | 12 | SM | S-2: Similar to S-1. |
| | 5 | S | 3 | 11-10-10-12 (24.0") | 20 | SM | S-3: Silty sand, uniform, fine, 35-50% nonplastic fines, uniform dense, moist, brown. |
| | | S | 4 | 6-12-15-16 (21.0") | 27 | SM SP-SM GW-GM | S-4A (Top 8"): Similar to S-3. S-4B (Mid. 4"): Sand, fine to medium, 5-10% nonplastic fines, medium dense, brown. S-4C (Bot. 9"): Sandy gravel, subrounded to subangular, to 1 1/2", 30-40% fine to coarse sand, 5-10% nonplastic fines, medium dense, brown. |
| | 10 | S | 5 | 8-11-14-17 (18.0") | 25 | SP-SM SW-SM | S-5A (Top 12"): Sand, fine to medium, 5-10% nonplastic fines, medium dense, brown. S-5B (Bot. 6"): Gravelly sand, widely graded, 10-20% subrounded gravel to 1 1/2", 5-15% nonplastic fines, medium dense, brown. |
| | 0 | S | 6 | 18-32-22-20 (15.0") | 54 | SW-SM | S-6: Similar to S-5B, except 20-30% gravel, very dense. |
| | 15 | S | 7 | 11-18-19-18 (17.0") | 37 | SW-SM | S-7: Similar to S-6, except dense. |
| | -5 | S | 8 | 14-14-18-29 (18.0") | 32 | SW-SM | S-8: Gravelly sand, widely graded, 20-30% subrounded gravel to 1 1/2", 10-20% nonplastic fines, dense, brown. |
| | 20 | S | 9 | 26-34-50-52 (18.0") | 84 | SW-SM | S-9: Gravelly sand, widely graded, 30-40% subrounded gravel to 1 1/2", 5-15% nonplastic fines, very dense, brown. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRB | Date 04/05/96 |
|-----------------|------------------|

Site: Fields Point, Providence, RI

Logged by: A.C. Smith

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|--|
| | | Type | No. | | | | |
| -10 | | | | | | | |
| | 25 | S | 10 | 15-18-17-19 (18.0°) | 35 | SW-SM ML-SP | S-10A (Top 3"): Similar to S-9, except medium dense. S-10B (Bot. 15"): Sandy silt, nonplastic to slightly plastic, 35-50% fine to coarse sand, mostly fine, medium dense, gray. |
| -15 | | | | | | | |
| | 30 | S | 11 | 15-25-21-25 (13.0°) | 46 | ML-SP SW | S-11A (Top 3"): Similar to S-10B, except dense. S-11B (Bot. 10"): Gravelly sand, well graded, 20-30% subrounded fine gravel, <5% nonplastic fines, dense, gray-brown. |
| -20 | | | | | | | |
| | 35 | S | 12 | 41-34-24-21 | 58 | GP-GM | S-12: Sandy gravel, subrounded to 1 1/2", 30-40% fine to coarse sand, 5-10% nonplastic fines, very dense, gray-brown. |
| -25 | | | | | | | |
| | 40 | S | 13 | 31-33-40-42 (15.0°) | 73 | SW | S-13: Gravelly sand, well-graded, 15-25% subrounded fine gravel, <5% nonplastic fines, very dense, gray-brown. |
| -30 | | | | | | | |
| | 45 | S | 14 | 15-25-41-43 (16.0°) | 66 | SW | S-14: Sand, well graded, 5-10% rounded fine gravel, <5% nonplastic fines, very dense, brown. |
| -35 | | | | | | | |
| | 50 | S | 15 | 31-40-47-41 (20.0°) | 87 | SW | S-15: Gravelly sand, well graded, 35-45% subrounded gravel to 1 1/2", <5% nonplastic fines, very dense, gray. |
| -40 | | | | | | | |
| | 55 | | | | | | |
| -45 | | | | | | | |
| | 60 | | | | | | |
| -50 | | | | | | | |

BOTTOM OF BORING AT 52 FEET

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

| | |
|--|---|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 90.04 W 1284.01 Groundwater Depth: 9 ft Contractor: American Drilling | Logged by: R.T. DeConto Date Start - Finish: 11/08/95 - 11/09/95 Ground Elevation: 12.598 ft Total Depth Drilled: 52 ft Driller: R. Leger Rig Type: CME-75 |
|--|---|

Methods: Casing Used: None
 Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Comments: Groundwater depth as npted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|----------------------|---|
| | | Type | No. | | | | |
| 12.6 | 0 | | | | | | Augered to 2'; Fill. |
| | 10 | S | 1 | 9-12-11-12 (22.0") | 23 | GP-GM | S-1: Sandy gravel, subrounded to 1 3/4", 20-30% fine to coarse sand, mostly fine, 5-10% nonplastic fines, medium dense, damp, black witholive mottling. |
| | 5 | S | 2 | 5-18-21-20 (20.0") | 39 | SP-SM | S-2: Gravelly sand, 15-25% subrounded gravel to 1 1/2", fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, moist, black and light brown; trace gravel size brick and coke fragments, slight hydrocarbon odor. |
| | 5 | S | 3 | 4-7-13-12 (10.0") | 20 | SP-SM ML SW-SM | S-3A (Top 4"): Similar to S-2, except medium dense, oily and strong hydrocarbon odor. S-3B (Mid. 2"): Sandy silt, slightly plastic, 10-30% fine sand, very stiff, moist, tan. S-3C (Bot. 4"): Gravelly sand, widely graded, 10-15% subrounded gravel to 1", fine to coarse sand, 10-15% slightly plastic fines, medium dense, moist, light brown. |
| | 10 | S | 4 | 8-10-12-12 (9.0") | 22 | SW-SM | S-4: Sand, widely graded, 5-10% subrounded gravel to 1", fine to coarse sand, 15-25% nonplastic fines (mostly in lenses), medium dense, saturated, light olive brown. |
| | 10 | S | 5 | 7-7-9-13 (15.0") | 16 | SM | S-5: Silty sand, uniform, fine, 10-20% nonplastic fines (mainly in lenses), medium dense, light olive. |
| | 0 | S | 6 | 12-13-14-13 (10.0") | 27 | SP | S-6: Sand, poorly graded, medium to coarse mostly medium, <5% nonplastic fines, medium dense, medium brown. |
| | 15 | S | 7 | 10-5-6-5 (16.0") | 11 | SP | S-7: Similar to above, except fine to coarse sand, medium gray brown. |
| | 15 | S | 8 | 7-9-10-9 | 19 | SP-SM | S-8: Sand, 5-10% flat rounded gravel to 1/2", fine to coarse sand, mostly medium, 5-10% nonplastic fines, medium dense, medium gray brown. |
| | -5 | | | | | | |
| | 20 | S | 9 | 3-6-9-7 (18.0") | 15 | SP-SM | S-9: Sand, 5-10% rounded gravel to 1", fine to coarse sand, mostly fine, 5-10% nonplastic fines, medium dense, medium brown. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRB | Date 04/05/96 |
|-----------------|------------------|

Stone & Webster
Engineering Corporation

BORING LOG

Site: Fields Point, Providence, RI

Log

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Descript. |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -10 | 25 | S | 10 | 3-6-9-11 (12.0") | 15 | SP-SM | S-10: Similar to S-9, except 2-5% gravel to 1/2", nonplastic fines in pockets. |
| -15 | 30 | S | 11 | 12-11-13- 14 (16.0") | 24 | SP SP-SM | S-11A (Top 6"): Sand, poorly graded, 2-5% gravel to 1/2", fine to medium sand, mostly medium, <5% nonplastic fines, medium dense, medium olive brown. S-11B (Bot. 10"): Sand, uniform, fine, 5-10% nonplastic fines, medium dense, medium olive brown. |
| -20 | 35 | S | 12 | 11-10-12- 14 (18.0") | 22 | SP | S-12: Sand, poorly graded, 2-5% rounded gravel to 1/2", fine to medium sand, mostly fine, <5% nonplastic fines, medium dense, medium gray brown, orange iron oxide banding through bottom 10" of sample. |
| -25 | 40 | S | 13 | 5-11-16-8 | 27 | | S-13: No recovery. |
| -30 | | S | 14 | 15-17-27- 32 (19.0") | 44 | SP-SM SP | S-14A (Top 9"): Sand, uniform, 10-15% slightly plastic fines (in lenses), dense, light olive brown with gray bands. S-14B (Bot. 10"): Gravelly sand, 20-30% subrounded gravel to 3/4", fine to coarse sand, mostly coarse, dense, olive with orange iron oxide. |
| -35 | 45 | S | 15 | 16-18-13- 21 | 31 | GW-GM | S-15: Sandy gravel, subrounded to 1 1/2", 35-45% fine to coarse sand, mostly fine (in lenses), 5-10% slightly plastic fines (in pockets), very dense, mottled (orange brown and olive). |
| -40 | 50 | S | 16 | 11-11-13- 14 (15.0") | 24 | SP ML | S-16A (Top 5"): Sand, uniform, fine, <5% nonplastic fines, medium dense, light yellow brown. S-16B (Bot. 10"): Silt, nonplastic, 5-10% fine sand, very stiff, light gray with occasional dark bands. |
| -45 | 55 | | | | | | BOTTOM OF BORING AT 52 FEET |
| -50 | 60 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

| | |
|--|---|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 120.34 W 1366.47 Groundwater Depth: 6.5 ft Contractor: American Drilling | Logged by: R.T. DeConto Date Start - Finish: 11/08/95 - 11/08/95 Ground Elevation: 10.985 ft Total Depth Drilled: 52 ft Rig Type: CME-75 Depth to Bedrock: Driller: R. Leger |
|--|---|

Methods: Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Casing Used: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|-------------------|---|
| | | Type | No. | | | | |
| 11.0 | 0 | | | | | | Auger to 2' |
| | | | | | | | Fill: 10-20% gravel to 2". fine to coarse sand, 5-10% nonplastic fines, damp, light yellow, green staining. |
| | | S | 1 | 8-10-12-46 (9.0') | 22 | GP-GM | S-1: Sandy gravel, subangular to 1 3/8", 20-30% fine to coarse sand, 5-10% nonplastic fines, medium dense, damp, dark brown gravel and light yellow green sand. |
| | | S | 2 | 28-32-33-40 (22.0') | 65 | GP | S-2: Sandy gravel, poorly graded, subangular to 1 1/2", 10-20% fine to coarse sand, mostly medium, <5% nonplastic fines, very dense, dry, mottled (pink, yellow, brown, and green gray, due to chemical staining); gravel disintegrated. |
| | | S | 3 | 14-17-19-36 (15.0') | 36 | GP | S-3: Similar to above, except 30-40% sand, dense, saturated. |
| | | S | 4 | 18-22-28-35 (20.0') | 50 | SP-SM | S-4: Gravelly sand, 15-25% gravel to 1", fine to coarse sand, mostly fine, 5-10% slightly plastic fines, dense to very dense, mottled (yellow brown and tan). |
| | | S | 5 | 14-19-22-28 (18.0') | 41 | GP | S-5: Sandy gravel, poorly graded, subangular to 1 1/2", 10-20% fine to coarse sand, <5% nonplastic fines, dense, light brown. |
| | | S | 6 | 18-24-22-27 (16.0') | 46 | GP-GM | S-6: Sandy gravel, subangular to subrounded to 1 1/2", 20-30% fine to coarse sand, 5-10% slightly plastic fines in pockets, dense, mottled (light brown, yellow, taupe, and green (possible staining)). |
| | | S | 7 | 14-12-16-22 (6.0') | 28 | GP-GM | S-7: Similar to S-6, except medium dense. |
| | | S | 8 | 10-12-18-16 | 30 | SP | S-8: Sand, poorly graded, rounded, fine to coarse, mostly medium, <5% nonplastic fines, medium dense to dense, gray with black organic layers. |
| | | S | 9 | 17-14-19-24 (16.0') | 33 | SP GW-GM SP | S-9A (Top 4" and Lower Mid 2"): Sand, uniform, fine, <5% nonplastic fines, dense, gray brown. S-9B (Upper Mid, 9"): Sandy gravel, subangular to 1 3/4", 30-40% fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, light olive. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRS | Date 04/05/96 |
|-----------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N V a l u e | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-----------------------------------|---------------|--|
| | | Type | No. | | | | |
| | 25 | S | 10 | 18-25-24- 25 (15.0') | 49 | SW-SM SP | S-9C (Bot. 4"): Gravelly sand, poorly graded, 20-30% subrounded gravel to 3/4", fine to coarse sand, <5% nonplastic fines, dense, black. S-10A (Top 7"): Gravelly sand, widely graded, 25-35% subrounded gravel to 1 1/2", fine to coarse sand, 5-10% nonplastic fines, dense, light brown gray. S-10B (Bot. 8"): Sand, poorly graded, 5-10% rounded flat gravel to 1/2", fine to coarse sand, mostly fine, <5% nonplastic fines, dense, yellow brown. |
| -15 | 30 | S | 11 | 6-5-11-12 (17.0') | 16 | SP-SM | S-11A (Top 6"): Gravelly sand, 20-30% subangular to subrounded gravel to 3/4", fine to coarse sand, 5-10% slightly plastic fines, medium dense, light olive gray. S-11B (Bot. 11"): Sand, <5% gravel to 3/4", fine to medium sand, mostly fine, 5-15% slightly plastic fines (in lenses), medium dense, light brown. |
| -20 | 35 | S | 12 | 14-10-11- 16 (18.0') | 21 | SP SP-SM | S-12A (Top 8"): Sand, poorly graded, fine to coarse, mostly fine, <5% nonplastic fines, medium dense, medium olive; 2" layer of mostly coarse sand. S-12B (Bot. 10"): Sand, uniform, fine, 10-15% nonplastic fines, medium dense, light olive brown. |
| -25 | 40 | S | 13 | 8-10-12- 12 (16.0') | 22 | SP | S-13: Sand, uniform, fine to medium, mostly medium, <5% nonplastic fines, medium dense, medium olive. |
| -30 | 45 | S | 14 | 8-7-7-10 (15.0') | 14 | SP | S-14: Similar to S-13; 2" layer of mostly coarse sand. |
| -35 | 50 | S | 15 | 8-13-17- 21 (21.0') | 30 | | S-15A (Top 8"): Similar to S-13. S-15B (Bot. 13"): Sand, uniform, fine, 5-10% nonplastic fines, medium dense to dense, medium light brown olive. |
| -40 | 55 | | | | | | BOTTOM OF BORING AT 52 FEET |
| -45 | 60 | | | | | | |
| -50 | | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRS

Date
04/05/96

| | |
|---|---|
| BORING CO. <u>Guild</u> F:EMAN <u>Tom Paquette, John Medeiros</u> GZA ENG. <u>Dan Oaks and Joanne Kissinger</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>±11'</u> DATUM <u>MLLW</u> DATE START <u>4/30/04</u> DATE END <u>5/05/04</u> |
|---|---|

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF
 A SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN
 CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb
 HAMMER FALLING 24 IN.
 CASING SIZE: 5" OTHER:

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|---------|------------|----------|---|--------|------------------------|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | S-1 | 24/20 | 0-2 | 5-6 | Loose, black/brown, fine to coarse (-) SAND, little Silt, trace Gravel (Coal) Medium dense, tan, fine (+) to medium SAND, trace fine Gravel, trace Silt Loose, brown, fine (+) to medium SAND, trace Silt Loose, brown, fine (+) to medium SAND, trace Silt Very loose, brown, fine to medium SAND, little Silt | 1 | GRANULAR FILL |
| | | | | | 4-8 | | | |
| | | S-2 | 24/20 | 2-4 | 5-5 | | | |
| | | | | | 8-6 | | | |
| | | S-3 | 24/10 | 4-6 | 11-5 | | | |
| | | | | | 4-5 | | | |
| | | S-4 | 24/8 | 6-8 | 5-3 | | | |
| | | | | | 3-1 | | | |
| | | S-5 | 24/8 | 8-10 | 3-1 | | | |
| | | | | | 1-2 | | | |
| 15 | | S-6 | 24/ | 14-16 | 7-4 | Medium dense, tan, fine to coarse (-) SAND, little Silt, trace fine Gravel | | |
| | | | | | 6-8 | | | |
| | | S-7 | 24/10 | 19-21 | 9-6 | | | |
| | | | | | 4-5 | | | |
| 22 | | S-8 | 24/12 | 24-26 | 3-3 | Loose, gray, fine to coarse SAND, little fine to coarse Gravel, trace Silt | | |
| | | | | | 3-2 | | | |
| | | S-9 | 24/11 | 29-31 | 6-5 | | | |
| | | | | | 7-5 | | | |

| | | |
|------------------------------------|------------------------------------|--|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 1. Groundwater encountered at ±8'. |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION | | |
|-------|--------------|--------|---------|------------|----------|--|--------|---------------------|--|------------------|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | | | |
| 30 | | S-10 | 24/11 | 34-36 | 9-8 | Medium dense, gray, fine to coarse SAND, little fine to coarse | ±39' | GRANULAR FILL | | |
| | | | | | 9-12 | Gravel, trace Silt | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 45 | | S-11 | 24/14 | 39-41 | 10-16 | Medium dense, gray, fine to coarse SAND, little fine to coarse | | | | |
| | | | | | 10-12 | Gravel, trace Silt | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 60 | | S-12 | 24/17 | 44-46 | 13-8 | Medium dense, gray, fine to medium SAND, some Silt, little | | | | OUTWASH DEPOSITS |
| | | | | | 13-24 | fine to coarse Gravel | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 65 | | S-13 | 24/21 | 49-51 | 25-26 | Very dense, gray and black, fine to medium SAND, some Silt | | | | |
| | | | | | 27-28 | (Shale) | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 70 | | S-14 | 24/18 | 54-56 | 17-18 | (Top): Dense, brown, black, fine to coarse (-) SAND, | | | | |
| | | | | | 24-28 | some Silt | | | | |
| | | | | | | (Bottom): Very dense, brown, fine to medium SAND, little Silt | | | | |
| | | | | | | | | | | |
| 75 | | S-15 | 24/21 | 59-61 | 22-25 | Dense, olive, fine SAND and SILT | | | | |
| | | | | | 24-34 | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 80 | | S-16 | 24/17 | 64-66 | 21-21 | Dense, olive, fine to coarse SAND, some fine to coarse Gravel, | 2 | | | |
| | | | | | 21-16 | little Silt | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 85 | | S-17 | 24/15 | 69-71 | 17-19 | Dense, gray, fine to coarse (-) SAND, trace Silt | | | | |
| | | | | | 21-16 | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| | | |
|--------------------|------------------|---------------------------------------|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 2. Switched to 3" casing at ±65 feet. |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES:

- 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
- 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DFPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | | S-18 | 24/16 | 74-76 | 15-14 | Medium dense, gray, fine to coarse SAND, trace Silt | | |
| | | | | | 13-16 | little Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| 80 | | S-19 | 24/14 | 79-81 | 18-17 | Dense, gray, fine to coarse SAND, trace Silt | | |
| | | | | | 30-43 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 85 | | S-20 | 24/12 | 84-86 | 24-28 | Very dense, gray GRAVEL and fine to coarse Sand, some Silt | | |
| | | | | | 24-21 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 90 | | S-21 | 24/17 | 89-91 | 38-16 | Medium dense, gray GRAVEL and fine (+) to coarse Sand, | | |
| | | | | | 8-12 | trace Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| 95 | | S-22 | 24/10 | 94-96 | 13-10 | Medium dense, gray, fine SAND, trace Silt | | |
| | | | | | 12-11 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 100 | | S-23 | 24/6 | 99-101 | 10-8 | Medium dense, gray, fine SAND, trace Silt | | |
| | | | | | 9-12 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 104 | | S-24 | 24/9 | 104-106 | 38-32 | Dense, gray, fine to coarse (-) SAND, some fine Gravel, little (+) | | |
| | | | | | 21-14 | Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| 110 | | S-25 | 24/3 | 109-111 | 21-37 | Very dense, gray GRAVEL, and fine to coarse Sand, little Silt | | |
| | | | | | 20-20 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 115 | | | | | | | | |

OUTWASH
DEPOSITS

±104'

GLACIAL
TILL

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | |
|------------------------------------|--------------|------------------------------------|-----------|
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

REMARKS:

NO S: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 115 | | S-26 | 24/20 | 114-116 | 58-62 | (Top 10"): Very dense, gray, fine to medium SAND, trace Silt | | GLACIAL TILL |
| | | | | | 67-95 | (Bottom 10"): Very dense, gray, fine to coarse (-) SAND, some Silt | | |
| | | S-27 | 24/18 | 119-121 | 43-41 | Very dense, gray, fine (+) to coarse SAND, and fine to coarse | | |
| | | | | | 40-51 | Gravel, some Silt | | |
| | | | | | | End of Exploration at ±121' | | |
| 125 | | | | | | | | |
| 130 | | | | | | | | |
| 140 | | | | | | | | |
| 145 | | | | | | | | |
| 155 | | | | | | | | |

| | | |
|---|---|----------|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|--|--------------------------|----------------------|--------|
| GZA GEOENVIRONMENTAL INC. 100 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECHNICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-2 |
| | KeySpan LNG Terminal | SHEET | 1 of 4 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| | | | |
|------------|-----------------------------|-----------------|-------------------------------|
| BORING CO. | Guild | BORING LOCATION | See Exploration Location Plan |
| OPERATOR | Tom Paquette, John Medeiros | MUDLINE ELEV. | -28.2 |
| GZA ENG. | Joanne Kissinger | DATUM | MLLW |
| | | DATE START | 4/27/04 |
| | | DATE END | |

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF
" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb
HAMMER FALLING 24 IN.

CASING SIZE: 5" OD OTHER: 3 3/4" HSA

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | S-1 | 24/2 | 0-2 | WOR | Very soft, black, Organic SILT, trace Shells | 1 | ORGANIC SILT |
| | | S-2 | 24/24 | 2-4 | WOR | Very soft, black, Organic SILT, trace Shells | 2 | |
| | | S-3 | 24/24 | 4-6 | WOR | Very soft, Organic SILT, trace Shells | | |
| | | S-4 | 24/24 | 6-8 | WOR | Very soft, Organic SILT, trace Shells | | |
| | | S-5 | 24/3 | 8-10 | 6-7 | Medium dense, black, fine to coarse SAND, trace Organic Silt, trace Shells | | |
| | | S-6 | 24/24 | 10-12 | 14-8 | Medium dense, gray, fine to coarse GRAVEL and fine to coarse SAND, trace Silt | | |
| | | S-7 | 24/1 | 12-14 | 15-13 | Medium dense, coarse GRAVEL | | |
| | | S-8 | 24/18 | 14-16 | 18-10 | Medium dense, gray, fine to coarse SAND and fine to coarse GRAVEL, trace Silt | | |
| | | S-9 | 24/16 | 16-18 | 14-11 | Medium dense, gray, fine to coarse SAND and fine GRAVEL, some Silt | | |
| | | S-10 | 24/6 | 18-20 | 15-14 | Medium dense, gray, fine to coarse SAND, some Silt, trace fine Gravel | | |
| | | S-11 | 24/12 | 20-22 | 15-16 | Very dense, gray, fine to coarse SAND, some Silt, trace fine Gravel | | |
| | | S-12 | 24/20 | 22-24 | 14-13 | Dense, gray, fine to coarse SAND, some Silt, trace fine Gravel | | |
| | | S-13 | 24/12 | 24-26 | 14-9 | Medium dense, brown, fine to coarse SAND, little Silt, trace fine Gravel | | |
| | | S-14 | 24/16 | 26-28 | 17-13 | Medium dense, brown, fine to coarse (-) SAND and SILT, trace fine Gravel | | |
| | | S-15 | 24/12 | 28-30 | 13-15 | Dense, brown, fine to coarse (-) SAND and SILT, trace fine Gravel | | |
| | | | | | 28-44 | Gravel | | OUTWASH DEPOSITS |

| | | |
|------------------------------------|------------------------------------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. 30' from top of tub to top of mudline. 11:30 am tide reading=20'. 2. Drill ahead and then install casing. |
| 0-30 LOOSE | 2-4 SOFT | |
| 30-50 MEDIUM DENSE | 4-8 M. STIFF | |
| >50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| PTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-----|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | | S-16 | 24/14 | 35-37 | 22-24 | Dense, gray SILT, some medium to coarse Sand, trace fine to coarse Gravel | | |
| | | | | | 23-26 | | | |
| | | S-17 | 24/5 | 40-42 | 11-14 | Medium dense, gray, coarse SAND and coarse GRAVEL | | |
| | | | | | 16-7 | | | |
| | | S-18 | 24/16 | 45-47 | 11-7 | Medium dense, coarse SAND and coarse Gravel | | |
| | | | | | 7-8 | | | |
| 50 | | S-19 | 24/9 | 50-52 | 24-18 | Dense, brown, coarse SAND and coarse GRAVEL | | |
| | | | | | 18-11 | | | |
| | | S-20 | 24/10 | 55-57 | 24-25 | Very dense, tan SILT and medium to coarse SAND, little fine Gravel | | OUTWASH DEPOSITS |
| | | | | | 27-20 | | | |
| 60 | | S-21 | 1/1 | 60-62 | 100/1" | Tan, to light gray, coarse SAND and coarse GRAVEL | | |
| | | | | | | | | |
| 65 | | S-22 | 24/8 | 65-67 | 17-29 | Dense, gray, fine to coarse SAND, some fine Gravel, little Silt | | |
| | | | | | 19-11 | | | |
| 7 | | S-23 | 24/14 | 70-72 | 24-10 | Medium dense, gray SILTY SAND, little fine Gravel | | |
| | | | | | 18-24 | | | |

| | | |
|-------------------------|-------------------------|-----------------|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION | | | |
|-------|--------|--------|-------|-----------|------------|---|---------------------|------------------------|-----------------|-----------------|-----------------|
| | | BLOWS | NO | PEN./REC | DEPTH (FT) | | | | BLOWS/6" | | |
| 75 | | S-24 | 24/4 | 75-77 | 9-10 | Medium dense, gray, fine to coarse GRAVEL, trace fine Sand, trace Silt | OUTWASH DEPOSITS | | | | |
| | | | | | 9-8 | | | | | | |
| 80 | | S-25 | 24/7 | 80-82 | 22-15 | Medium dense, gray, fine to coarse GRAVEL, trace Silt | | GLACIAL TILL | | | |
| | | | | | 10-22 | | | | | | |
| 85 | | S-26 | 24/12 | 85-87 | 16-60 | Very dense, gray SILT, little fine Gravel | | | GLACIAL TILL | | |
| | | | | | 26-44 | | | | | | |
| 90 | | S-27 | 1/0 | 90-92 | 100/1" | NO RECOVERY | | | | GLACIAL TILL | |
| | | | | | | | | | | | |
| 95 | | S-28 | 5/5 | 95-97 | 100/5" | Very dense, gray, fine to coarse GRAVEL, trace Clay | | | | | GLACIAL TILL |
| | | | | | | | | | | | |
| 100 | | S-29 | 23/18 | 100-102 | 68-61 | Very dense, gray, CLAYEY SAND, some fine to coarse Gravel, trace Silt | GLACIAL TILL | | | | |
| | | | | | 92-100/5" | | | | | | |
| 105 | | S-30 | 9/6 | 105-105.8 | 55-100/3" | Very dense, gray, fine to coarse (-) SAND, some Silt, little fine Gravel | | GLACIAL TILL | | | |
| | | | | | | | | | | | |
| 110 | | S-31 | 24/15 | 110-112 | 27-87 | Very dense, gray GRAVEL, and fine to coarse Sand, some Silt | | | GLACIAL TILL | | |
| | | | | | 75-79 | | | | | | |
| 115 | | | | | | | | | | GLACIAL TILL | |
| | | | | | | | | | | | |
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| | | | |
|-------|------------------|------------------|-----------|
| | GRANULAR SOILS | COHESIVE SOILS | REMARKS: |
| | BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-1 | LOOSE | 2-4 | SOFT |
| 10-3 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

NOT 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER
MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DI | FH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-----|----|-----------------|--------|----------|------------|---------------|--|--------|------------------------|
| | | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 115 | | | S-32 | 9/7 | 115-115.8 | 81-100/3" | Very dense, gray, fine to coarse SAND, some Silt, trace fine Gravel | | GLACIAL TILL |
| 12' | | | S-33 | 24/10 | 120-122 | 9-13 24-29 | Dense, gray, fine to coarse SAND, some Silt, trace fine Gravel | 3 | |
| 12' | | | | | | | End of Exploration at ±122' | | |
| 130 | | | | | | | | | |
| 13' | | | | | | | | | |
| 140 | | | | | | | | | |
| 145 | | | | | | | | | |
| 150 | | | | | | | | | |
| 155 | | | | | | | | | |

| | | | |
|------------------------------------|------------------------------------|--|----------------------------------|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: 3. 300# hammer used. |
| 0-4 VERY LOOSE | <2 VERY SOFT | | |
| 4- LOOSE | 2-4 SOFT | | |
| 10- MEDIUM DENSE | 4-8 M. STIFF | | |
| 30-50 DENSE | 8-15 STIFF | | |
| >50 VERY DENSE | 15-30 V. STIFF | | |
| | >30 HARD | | |

NO S: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER
MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|--|--------------------------|----------------------|--------|
| GZA GEOENVIRONMENTAL INC. 100 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-3 |
| | KeySpan LNG Terminal | SHEET | 1 of 3 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| | | | |
|------------|------------------|-----------------|-------------------------------|
| BORING CO. | Geologic | BORING LOCATION | See Exploration Location Plan |
| REMAN | Tim Tucker | MUDLINE ELEV. | -28.2' |
| GZA ENG. | Joanne Kissinger | DATUM | MLLW |
| | | DATE START | 4/6/04 |
| | | DATE END | 4/6/04 |

| | | | | |
|---|--------|----------------------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | | GROUNDWATER READINGS | | |
| DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb | | | | |
| HAMMER FALLING 24 IN. | | | | |
| CASING SIZE: | OTHER: | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|-----------|------------|----------|---|--------|------------------------|
| | | NO | PENI./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | S-1 | 24/4 | 0-2 | W.O.R. | Black, very soft, organic SILT | | ORGANIC SILT |
| | | S-2 | 24/2 | 2-4 | W.O.R. | Very soft, black, Organic SILT | | |
| | | S-3 | 24/24 | 4-6 | W.O.R. | Very soft, black, organic SILT | 1 | |
| | | S-4 | 24/24 | 6-8 | W.O.R. | Very soft, black, Organic SILT | 2 | |
| 40 | | | | | | | | |
| 40 | S-5 | 24/15 | | 8-10 | 1/12" | Very soft, black, Organic SILT, little medium to coarse Sand | | ±10' |
| 30 | | | | | 3-8 | | | |
| 25 | S-6 | 24/15 | | 10-12 | 8-7 | (Top 3"): Soft, black, Organic SILT, little fine to medium Sand | | |
| 25 | | | | | 9-12 | (Bottom 12"): Very stiff, tan SILT | | |
| 25 | S-7 | 24/7 | | 12-14 | 9-12 | (Top 1"): Soft, gray SILT | | |
| 25 | | | | | 16-19 | (Bottom 6"): Very stiff, tan SILT, fine Sand and Silt | | |
| 25 | S-8 | 24/8 | | 14-16 | 9-23 | (Top 2"): Dense, black, fine to medium SAND and SILT, little fine Gravel | | |
| 28 | | | | | 42-32 | (Bot. 6"): Dense, tan, fine to coarse SAND, some Silt, little fine Gravel | | |
| 45 | S-9 | 24/10 | | 16-18 | 30-44 | Very dense, tan, fine to medium SAND, some Silt, little fine to coarse | | |
| 50 | | | | | 38-34 | Gravel | | |
| 70 | S-10 | 24/6 | | 18-20 | 19-39 | Very dense, olive, fine to medium SAND, some Silt, little fine Gravel | | OUTWASH DEPOSITS |
| 75 | | | | | 25-17 | | | |
| 68 | S-11 | 24/3 | | 20-22 | 14-16 | Medium dense, olive, fine to coarse SAND, little fine Gravel, | | |
| 65 | | | | | 8-10 | trace Silt | | |
| 65 | S-12 | 24/12 | | 22-24 | 10-38 | Very dense, olive, fine to medium SAND, fine Gravel, little Silt | | |
| 65 | | | | | | | | |
| 65 | S-13 | 24/5 | | 24-26 | 23-22 | Very dense, olive, fine to medium SAND, little fine Gravel, | | |
| 65 | | | | | 38-25 | little Silt | | |
| 65 | S-14 | 24/12 | | 26-28 | 38-30 | Very dense, olive, fine to coarse SAND, little fine Gravel, little | | |
| 65 | | | | | 27-25 | Silt | | |
| 65 | S-15 | 24/4 | | 28-30 | 14-37 | Very dense, olive, fine to medium SAND, some Silt, little fine Gravel | | |
| 65 | | | | | 32-45 | | | |
| 52 | | | | | | | | 3 |
| 52 | | | | | | | | |
| 53 | | | | | | | | |
| 51 | | | | | | | | |

| | | |
|------------------------------------|------------------------------------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Petroleum-type odor. |
| 0 LOOSE | 2-4 SOFT | 2. Petroleum-type odor. |
| 30 MEDIUM DENSE | 4-8 M. STIFF | 3. Possible boulders encountered (nested boulders). |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 4 | | S-16 | 24/15 | 40-42 | 12-9 | Medium dense, gray, fine to medium SAND, little Silt | 5 | |
| | | | | | 10-13 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 45 | | | | | | | 6 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 50 | | S-17 | 24/5 | 50-52 | 26-17 | Dense, fine to coarse (-) SAND, some fine Gravel, trace Silt | 7 | |
| | | | | | 21-25 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 5 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 60 | | S-18 | 24/8 | 60-62 | 23-12 | Medium dense, gray, fine to coarse SAND, little fine Gravel, | 8 | |
| | | | | | 9-10 | little Silt | 9 | |
| | | | | | | | | |
| | | | | | | | | |
| 65 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 71 | | S-19 | 24/14 | 70-72 | 6-7 | Medium dense, gray, fine to medium SAND, trace Silt | | |
| | | | | | 10-12 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 75 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 4. Rollerbit ahead from 35' to 40'. |
| 4-10 LOOSE | 2-4 SOFT | 5. Rollerbit ahead to 50'. |
| 10 MEDIUM DENSE | 4-8 M. STIFF | 6. Possible boulders encountered. Water added to drilling tub (losing water ±49') (mud added) |
| 3-10 DENSE | 8-15 STIFF | 7. Rollerbit ahead to 60'. Nested boulders 53' to 60'. |
| >50 VERY DENSE | 15-30 V. STIFF | 8. Mud added to tub 58' of water. Attempt S-18 but rods wouldn't go down by ±20' (possible boulder) |
| | >30 HARD | fill into hole or hole collapsed). Drillers will clean out and install 4" casing tomorrow morning. |

NOTES:

- 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
- 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75' | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 80' | | S-20 | 18/18 | 80-81.5 | 6-31 | Very dense, gray, fine to medium SAND, trace Silt | 10 | OUTWASH DEPOSITS |
| | | | | | 123/6" | | 11 | |
| | | | | | | | 12 | |
| | | | | | | | | |
| | | | | | | | | |
| 85' | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 90' | | S-21 | 24/21 | 90-92 | 47-38 | Very dense, gray, fine to coarse SAND, little Silt, trace fine | ±90' | |
| | | | | | 34-41 | Gravel | 13 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 100' | | S-22 | 24/12 | 100-102 | 46-39 | Very dense, gray, fine to coarse SAND, some fine to coarse Gravel, | 14 | GLACIAL TILL |
| | | | | | 56-60 | some Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 105' | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 110' | | S-23 | 24/15 | 110-112 | 89-52 | Very dense, gray, fine to medium SAND, some Silt, trace fine | | |
| | | | | | 55-55 | Gravel | | |
| | | | | | | | | |
| | | | | | | | | |
| 115' | | | | | | End of Exploration at ±112' | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
|------------------------------------|--------------|------------------------------------|-----------|----------|
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 30-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

REMARKS:
 10. Possible boulder encountered while driving casing. Wash ahead from approximately 77' to 80'.
 11. Sand blew up into rods, after 5-20 collected and began to wash ahead.
 12. 4-9-04 finish cleaning blown in sands and wash ahead to 85' casing installed to 85'. Boulders encountered.
 13. Rollerbit ahead and wash out to 100'.
 14. After S-22 casing driven to 95'. Rollerbit ahead. Losing water at 105' during washout. Tough drilling at 108'.
 Drive casing to 103'.

| | | | | | |
|---------------------------------------|--|--------------------------|--|----------------------------------|--|
| G7A GEOENVIRONMENTAL INC. | | PROJECT | | REPORT OF BORING NO. <u>GZ-5</u> | |
| 11 BROADWAY, PROVIDENCE, RHODE ISLAND | | KeySpan LNG Terminal | | SHEET <u>1 of 4</u> | |
| GEO TECH/GEOHYDROLOGICAL CONSULTANTS | | Providence, Rhode Island | | FILE NO. <u>32784</u> | |
| GEOTECHNICAL BORING LOG | | | | CHKD BY <u>DMA</u> | |

| | | |
|---------------------------------------|--|-------------------------|
| ENGINEERING CO. <u>Geologic</u> | BORING LOCATION <u>See Exploration Location Plan</u> | |
| FIELD MAN <u>Tim Tucker</u> | MUDLINE ELEV. <u>-10.3'</u> | DATUM <u>MLLW</u> |
| GEOTECH. ENG. <u>Joanne Kissinger</u> | DATE START <u>3/24/04</u> | DATE END <u>3/24/04</u> |

| | | | | | |
|---|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>5"</u> OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | REMARKS | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|-----------|---|---------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | S-1 | 24/15 | 0-2 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter | | ORGANIC SILT |
| | | S-2 | 24/24 | 2-4 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter | | |
| | | S-3 | 24/12 | 4-6 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter | | |
| | | S-4 | 24/18 | 6-8 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter | | |
| | | S-5 | 24/18 | 8-10 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter, trace Shells | | |
| | | S-6 | 24/12 | 10-12 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter, no Shells | | |
| | | S-7 | 24/12 | 12-14 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter, trace Fiber | | |
| | | S-8 | 24/12 | 14-16 | W.O.R. | (Top 4"): Very soft, black, fine SAND, little Silt (Bottom 8"): Very soft, black, Organic SILT, trace Organics, trace Shells | | |
| | | S-9 | 24/12 | 16-18 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter, trace Shells | | |
| | | S-10 | 24/20 | 18-20 | W.O.R. | (Top 4"): Very soft, black, fine SAND, little Silt (Bottom 8"): Very soft, black, Organic SILT, trace Organics, trace Shells | | |
| 15 | | S-11 | 24/12 | 20-22 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace Organic Matter, trace Shells | | |
| | | S-12 | 24/18 | 22-24 | W.O.R. | Very soft, black, Organic SILT, trace organic Matter, trace Shells | | |
| | | S-13 | 24/24 | 24-26 | W.O.R. | Very soft, black, Organic SILT, trace Organics, trace Shells | | |
| | | S-14 | 24/18 | 26-28 | WOR-13 | (Top 12"): Medium dense, dark gray, fine SAND and Organic SILT, trace Wood Chip | | |
| 20 | | S-15 | 21/21 | 28-29.8 | 3-16 | (Bottom 6"): Medium dense, dark gray, fine to coarse Organic SAND and Organic SILT | | ±28' |
| | | | | | 95-100/3" | SAND and Organic SILT | | |
| | | | | | | S-15: Very dense, dark gray, organic, fine to coarse SAND, some Silt, some fine Gravel | | |
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| 30 | | | | | | | | OUTWASH DEPOSITS |
| | | | | | | | | |
| | | | | | | | | |

| | | |
|---|--|--|
| GRANULAR SOILS BLOWS/FT DENSITY 0-4 VERY LOOSE 5-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Possible boulder encountered. |
|---|--|--|

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|----------------------|--------|
| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEO TECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. | GZ-5 |
| | KeySpan LNG Terminal | SHEET | 2 of 4 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | 52 | S-16 | 24/4 | 35-37 | 26-24 | Dense, dark gray, fine to coarse SAND, organic, little Silt, trace fine Gravel | 2 | OUTWASH DEPOSITS |
| | 65 | | | | 19-20 | | | |
| | 68 | | | | | | | |
| | 72 | | | | | | | |
| | 63 | | | | | | | |
| | 58 | S-17 | 24/6 | 40-42 | 19-18 | Dense, dark gray, fine (+) to coarse (-) SAND, some Silt, some fine Gravel | | |
| | 55 | | | | 18-14 | | | |
| | 73 | | | | | | | |
| | 74 | | | | | | | |
| 45 | 65 | | | | | | | |
| | 61 | S-18 | 24/4 | 45-47 | 13-20 | Dense, dark gray, fine to medium SAND, trace Silt, trace fine Gravel | | |
| | 68 | | | | 25-40 | | | |
| | 70 | | | | | | | |
| | 76 | | | | | | | |
| | 75 | | | | | | | |
| | 101 | S-19 | 24/6 | 50-52 | 26-16 | Medium dense, dark gray, fine to medium Gravel, little fine to coarse, trace Silt | | |
| | 117 | | | | 7-4 | | | |
| | 147 | | | | | | | |
| | 124 | | | | | | | |
| | 102 | | | | | | | |
| | 101 | S-20 | 24/9 | 55-57 | 16-20 | Dense, dark gray, fine to medium GRAVEL/SHALE, some fine to coarse Sand, trace Silt | | |
| | 95 | | | | 22-21 | | | |
| | 114 | | | | | | | |
| | 142 | | | | | | | |
| 60 | 112 | | | | | | | |
| | 61 | S-21 | 24/10 | 60-62 | 31-17 | Dense, gray, fine to coarse SAND and GRAVEL, little Silt | | |
| | 200 | | | | 14-17 | | | |
| | 210 | | | | | | | |
| | 220 | | | | | | | |
| | 230 | | | | | | | |
| | 30 | S-22 | 24/7 | 65-67 | 24-16 | Dense, gray, fine to coarse SAND and GRAVEL, trace Silt | | |
| | 30 | | | | 22-28 | | | |
| | 30 | | | | | | | |
| | 30 | | | | | | | |
| | 90 | | | | | | | |
| | 90 | S-23 | 24/0 | 70-72 | 60-28 | NO RECOVERY | | |
| | 90 | | | | | | | |
| | 90 | | | | | | | |
| 75 | 110 | | | | | | | |

| <table border="1"> <tr> <th>GRANULAR SOILS BLOWS/FT DENSITY</th> <th>COHESIVE SOILS BLOWS/FT DENSITY</th> </tr> <tr> <td>0-4 VERY LOOSE</td> <td><2 VERY SOFT</td> </tr> <tr> <td>4-10 LOOSE</td> <td>2-4 SOFT</td> </tr> <tr> <td>30 MEDIUM DENSE</td> <td>4-8 M. STIFF</td> </tr> <tr> <td>50 DENSE</td> <td>8-15 STIFF</td> </tr> <tr> <td>>50 VERY DENSE</td> <td>15-30 V. STIFF</td> </tr> <tr> <td></td> <td>>30 HARD</td> </tr> </table> | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | 0-4 VERY LOOSE | <2 VERY SOFT | 4-10 LOOSE | 2-4 SOFT | 30 MEDIUM DENSE | 4-8 M. STIFF | 50 DENSE | 8-15 STIFF | >50 VERY DENSE | 15-30 V. STIFF | | >30 HARD | REMARKS: 2. Possible Cobbles encountered. 3. Switch to 4" casing. |
|--|------------------------------------|------------------------------------|----------------|--------------|------------|----------|-----------------|--------------|----------|------------|----------------|----------------|--|----------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | | | | | | | | | | | | | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | | | | | | | | | | | | | | |
| 4-10 LOOSE | 2-4 SOFT | | | | | | | | | | | | | | |
| 30 MEDIUM DENSE | 4-8 M. STIFF | | | | | | | | | | | | | | |
| 50 DENSE | 8-15 STIFF | | | | | | | | | | | | | | |
| >50 VERY DENSE | 15-30 V. STIFF | | | | | | | | | | | | | | |
| | >30 HARD | | | | | | | | | | | | | | |

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| PTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-----|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | 110 | S-24 | 24/2 | 75-77 | 24-16 | Dense, gray, fine to medium SAND, some Silt, little fine Gravel | 4 5 | |
| | 110 | | | | | | | |
| | 110 | | | | | | | |
| | 110 | | | | | | | |
| | 110 | | | | | | | |
| | 110 | | | | | | | |
| 80 | 40 | S-25 | 24/7 | 80-82 | 16/2-27 | Dense, gray, fine to medium SAND, some Silt, little fine Gravel | | |
| | 40 | | | | 23-21 | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| 90 | 40 | S-26 | 24/6 | 85-87 | 64-21 | Dense, gray, fine (+) to coarse (-) SAND, some Silt, little fine angular Gravel | | |
| | 40 | | | | 20-20 | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| 95 | 40 | S-27 | 24/0 | 90-92 | 34-25 | NO RECOVERY | | OUTWASH DEPOSITS |
| | 45 | | | | 19-11 | | | |
| | 48 | | | | | | | |
| | 67 | | | | | | | |
| | 72 | | | | | | | |
| | 78 | S-28 | 24/24 | 95-97 | 6-8 | | | |
| 100 | 84 | | | | 13-26 | Medium dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | | |
| | 85 | | | | | | | |
| | 107 | | | | | | | |
| | 240 | | | | | | | |
| | 316 | S-29 | 24/18 | 100-102 | 12-18 | | | |
| | 351 | | | | 21-24 | | | |
| 105 | 355 | | | | | Very dense, gray, fine to medium SAND, little Silt | 6 | |
| | 367 | | | | | | | |
| | 370 | | | | | | | |
| | 375 | S-30 | 24/12 | 105-107 | 35-28 | | | |
| | 381 | | | | 37-38 | | | |
| | 385 | | | | | | | |
| 110 | 382 | | | | | Medium dense, gray, fine to coarse (-) SAND and angular fine to coarse GRAVEL, trace Silt | 7 8 | |
| | 389 | | | | | | | |
| | 20 | S-31 | 24/3 | 110-112 | 40-9 | | | |
| | 20 | | | | 9-13 | | | |
| | 20 | | | | | | | |
| | 20 | | | | | | | |
| 115 | 20 | | | | | | 9 | |

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|------------------------------------|--------------|------------------------------------|-----------|--|
| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | 4. 100 Blows for 4" with 140# hammer. Switch to 300# hammer (S-25). |
| 4-10 | LOOSE | 2-4 | SOFT | 5. Weathered rock? |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | 6. Casing blow counts high, probably friction. Fine to medium sand observed in wash. |
| 30-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|-----------------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 115 | | S-32 | 24/8 | 115-117 | 20-7 12-18 | Medium dense, gray, fine to medium SAND, trace Silt, trace fine Gravel | 10 | OUTWASH DEPOSITS |
| 120 | | S-33 | 9/8 | 120-122 | 38-100/3" | Very dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | ±120' | GLACIAL TILL |
| 125 | | S-34 | 15/8 | 125-126.2 | 57-70 100/3" | Very dense, gray, fine to medium SAND, little fine Gravel, trace Silt | | |
| | | | | | | End of Exploration at ±126.2' | | |
| 130 | | | | | | | | |
| 135 | | | | | | | | |
| 140 | | | | | | | | |
| 145 | | | | | | | | |
| 150 | | | | | | | | |
| 155 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | |
|------------------------------------|--------------|------------------------------------|-----------|
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

REMARKS:
 7. Use mud to keep hole open after S-32.
 8. Sand blew into casing approximately ±8'.
 9. Drillers removed 5" casing and installed 3" casing, mud added.
 10. Possible boulder encountered, difficult drilling.

NOTES:
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| | | | |
|--|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO: | GZ-7 (A) |
| | KeySpan LNG Terminal | SHEET | 1 of 1 |
| | Providence, Rhode Island | FILE NO: | 32784 |
| | | CHKD BY | DMA |

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| BORING CO. <u>Guild</u> | BORING LOCATION <u>See Exploration Location Plan</u> |
| FOREMAN <u>Tom Paquette, John Mederios</u> | GROUND SURFACE ELEV. <u>±14'</u> DATUM <u>MLLW</u> |
| GZA ENG. <u>Joanne Klssinger</u> | DATE START <u>4/19/04</u> DATE END <u>4/19/04</u> |

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|---|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 5" OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | | | | | |
| | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|---------|------------|----------|--|--------|------------------------|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | |
| | | S-1 | 18/10 | 0-1.5 | 3-8 | Medium dense, brown, fine to medium SAND, trace fine | 1 | GRANULAR FILL |
| | | | | | 60/6" | Gravel, trace Silt | | |
| | | | | | | Refusal at ±1.5' | | |
| 5 | | | | | | | | |
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| <table border="1"> <tr> <th>GRANULAR SOILS BLOWS/FT DENSITY</th> <th>COHESIVE SOILS BLOWS/FT DENSITY</th> </tr> <tr> <td>0-4 VERY LOOSE</td> <td><2 VERY SOFT</td> </tr> <tr> <td>4-10 LOOSE</td> <td>2-4 SOFT</td> </tr> <tr> <td>10-30 MEDIUM DENSE</td> <td>4-8 M. STIFF</td> </tr> <tr> <td>30-50 DENSE</td> <td>8-15 STIFF</td> </tr> <tr> <td>>50 VERY DENSE</td> <td>15-30 V. STIFF</td> </tr> <tr> <td></td> <td>>30 HARD</td> </tr> </table> | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | 0-4 VERY LOOSE | <2 VERY SOFT | 4-10 LOOSE | 2-4 SOFT | 10-30 MEDIUM DENSE | 4-8 M. STIFF | 30-50 DENSE | 8-15 STIFF | >50 VERY DENSE | 15-30 V. STIFF | | >30 HARD | REMARKS: 1. Obstruction encountered. Relocated hole 5' away. |
|---|------------------------------------|------------------------------------|---------------------|-------------------|----------------|---------------|-----------------------|-------------------|----------------|----------------|---------------------|-------------------|--|---------------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | | | | | | | | | | | | | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | | | | | | | | | | | | | | |
| 4-10 LOOSE | 2-4 SOFT | | | | | | | | | | | | | | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | | | | | | | | | | | | | | |
| 30-50 DENSE | 8-15 STIFF | | | | | | | | | | | | | | |
| >50 VERY DENSE | 15-30 V. STIFF | | | | | | | | | | | | | | |
| | >30 HARD | | | | | | | | | | | | | | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | | PROJECT KeySpan LNG Terminal Providence, Rhode Island | | REPORT OF BORING NO. GZ-7 (B) SHEET 21 of 1 FILE NO. 32784 CHKD BY DMA | | | | |
|---|--------------|---|-----------|---|--------------------|---|--------|---------------------|
| BORING CO. <u>Guild</u> | | BORING LOCATION <u>See Exploration Location Plan</u> | | | | | | |
| FOREMAN <u>Tom Paquette, John Medeiros</u> | | GROUND SURFACE ELEV. <u>±14'</u> | | DATUM <u>MLLW</u> | | | | |
| GZA ENG. <u>Joanne Kissinger</u> | | DATE START <u>4/19/04</u> | | DATE END <u>4/19/04</u> | | | | |
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | | GROUNDWATER READINGS | | | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | | DATE | TIME | WATER | CASING | | | |
| CASING SIZE: <u>5"</u> OTHER: | | | | | STABILIZATION TIME | | | |
| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | P | S-1 | 24/18 | 0-2 | 7-7 | Medium dense, orange, fine to medium SAND, little fine Gravel, trace Silt (Top 15"): Medium dense, tan, fine to medium SAND, little fine Gravel, trace Silt (Bottom 3"): Loose, dark brown, fine to medium SAND, some Silt, trace fine Gravel | 1 | GRANULAR FILL |
| | P | | | | 8-8 | | | |
| | P | S-2 | 24/18 | 2-4 | 13-9 | | | |
| | P | | | | 11-9 | | | |
| | P | S-3 | 24/8 | 4-6 | 10-9 | | | |
| 10 | | | | | 8-13 | S-3: Medium dense, orange-brown, fine to coarse SAND, some Silt S-4: Very dense, brown and orange, fine to coarse SAND, some Silt, trace fine Gravel (wet) | 2 | |
| | | S-4 | 18/12 | 6-7.5 | 11-13 | | | |
| | | | | | 56/6" | | | |
| 15 | | | | | | Refusal at ±7.5' | | |
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| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: | | | | |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | 1. Obstruction encountered at ±7.5', pipe broke. Sample S-4 was collected and the hole relocated again 5' away. | | | | |
| 4-10 | LOOSE | 2-4 | SOFT | 2. Groundwater encountered at ±6'. | | | | |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | | | | | |
| 30-50 | DENSE | 8-15 | STIFF | | | | | |
| >50 | VERY DENSE | 15-30 | V. STIFF | | | | | |
| | | >30 | HARD | | | | | |
| NOTES: | | | | | | | | |
| 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. | | | | | | | | |
| 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE | | | | | | | | |

| GEOENVIRONMENTAL INC. | | PROJECT | | REPORT OF BORING NO. | | | | |
|---|--------------|--|-----------|--|----------|---|------|---------------------|
| 140 BROADWAY, PROVIDENCE, RHODE ISLAND | | KeySpan LNG Terminal | | GZ-7 (C) | | | | |
| GEOTECH/GEOHYDROLOGICAL CONSULTANTS | | Providence, Rhode Island | | SHEET 1 of 5 | | | | |
| GEOTECHNICAL BORING LOG | | | | FILE NO. 32784 | | | | |
| | | | | CHKD BY: DMA | | | | |
| BORING CO. <u>Guild</u> | | BORING LOCATION <u>See Exploration Location Plan</u> | | | | | | |
| FOREMAN <u>Tom Paquette, John Medeiros</u> | | GROUND SURFACE ELEV. <u>±14'</u> | | DATUM <u>MLLW</u> | | | | |
| GZA ENG. <u>Joanne Kissinger</u> | | DATE START <u>4/19/04</u> | | DATE END <u>4/24/04</u> | | | | |
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | | GROUNDWATER READINGS | | | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | | DATE | TIME | WATER | CASING | | | |
| CASING SIZE: <u>5" / 4"</u> OTHER: | | 4/24/04 | | ±11' | | | | |
| | | | | | | | | |
| | | | | | | | | |
| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION | R | STRATUM DESCRIPTION |
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | BURMISTER CLASSIFICATION | K | |
| 5 | S | | | | | | 1 | GRANULAR FILL |
| | S | | | | | | 2 | |
| | S | | | | | | 3 | |
| | P | | | | | | 4 | |
| | P | | | | | | | |
| 10 | S | | | | | Loose, gray, fine to coarse (-) SAND, little Silt (wet) | | |
| | S | S-5 | 24/2 | 8-10 | 4-1 | | | |
| | S | | | | 3-5 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 15 | S | S-6 | 24/0 | 14-16 | 19-18 | NO RECOVERY | | |
| | S | | | | 15-14 | | | |
| | S | S-7 | 24/4 | 16-18 | PUSH | Loose, black, fine to medium SAND, trace Silt (wet) | 5 | |
| | S | | | | | | | |
| | S | | | | | | | |
| 20 | 78 | S-8 | 24/6 | 19-21 | 20-8 | Medium dense, dark brown, FIBROUS WOOD, trace medium | ±19' | |
| | 68 | | | | 5-5 | Sand (wet) | | |
| | 33 | | | | | | | |
| | 32 | | | | | | | |
| | 46 | | | | | | | |
| 29 | | S-9A | 24/0 | 24-26 | 15-3 | NO RECOVERY | | |
| | | | | | 1-2 | | | |
| | | S-9B | 24/15 | 24-26 | PUSH | Very soft, gray, Organic SILT, trace Organics, Fibers, Shells | 6 | |
| | | | | | | | | |
| | | | | | | | | |
| | | UP-1 | 24/0 | 27-29 | | UNDISTURBED PISTON SAMPLE (NO RECOVERY) | 7 | |
| | | | | | | | 8 | |
| | | S-10A | 24/0 | 29-31 | 2-4 | NO RECOVERY | | |
| | | | | | 2-2 | | | |
| | | S-10B | 24/20 | 29-31 | PUSH | Very soft, gray, Organic SILT, trace Organics, Wood fibers | 9 | |
| GRANULAR SOILS | | COHESIVE SOILS | | REMARKS: | | | | |
| BLOWS/FT DENSITY | | BLOWS/FT DENSITY | | 1. Casing spun (s) or pushed (p). | | | | |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | 2. Samples S-1 through S-4 collected in boring GZ-7 (B). | | | | |
| 4-10 | LOOSE | 2-4 | SOFT | 3. Rollerbit from 0-8'. (Rollerbit through concrete from 1.5' to ±3'). Petroleum type odors 5-8' while rollerbit. Spin casing to 8'. | | | | |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | 4. Rollerbit ahead to 14'. Rollerbit through obstruction 10-12.8' 8. Install 4" casing. | | | | |
| 30-50 | DENSE | 8-15 | STIFF | 5. Rollerbit ahead to 19'. | | | | |
| >50 | VERY DENSE | 15-30 | V. STIFF | 6. Rollerbit ahead to 24' (wood encountered to 22.5') | | | | |
| | | >30 | HARD | 7. 3" spoon used to collect sample S-9B. | | | | |
| | | | | 9. 3" spoon used to collect sample S-10B. | | | | |
| NOTES: | | | | | | | | |
| 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. | | | | | | | | |
| 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE | | | | | | | | |

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|--|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. | GZ-7 (C) |
| | KeySpan LNG Terminal | SHEET | 2 of 5 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 30 | | UP-2 | 24/8 | 31-33 | | Undisturbed Piston Sample | 10 | ORGANIC SILT |
| 35 | | S-11 | 24/19 | 34-36 | 2-1 1/12" | Very soft, gray, ORGANIC SILT, trace Fibers | 11 | |
| 40 | | S-12 | 24/13 | 39-41 | WOR/18" 1 | Very soft, gray, ORGANIC SILT, trace Organics, Shells, Fibers | 12 | |
| 45 | | S-13 | 24/5 | 44-46 | 1-3 2-2 | Medium stiff, gray, ORGANIC SILT, trace Organics, Shells, Fibers | 13 | ±47' |
| 50 | | S-14 | 24/5 | 49-51 | 6-10 13-14 | (Top 4"): Loose, gray, fine (+) to medium SAND, some Silt (Bottom 1"): Loose, brown, fine (+) to coarse (-) SAND, little Silt | 14 | |
| 55 | | S-15 | 24/6 | 54-56 | 23-15 15-15 | Dense, brown, fine to coarse (-) SAND, some Silt | 15 | |
| 60 | | S-16 | 24/10 | 59-61 | 23-27 20-22 | Dense, gray, fine to coarse (-) SAND, some Silt, trace fine Gravel | 16 | |
| 65 | | S-17 | 24/12 | 64-66 | 13-12 8-14 | Medium dense, gray, fine to medium SAND, trace Silt S-18: (Top 2") Medium dense, gray, coarse SAND and fine Gravel, little fine to medium Sand, trace Silt | | |
| 70 | | S-18 | 24/10 | 69-71 | 27-16 12-8 | (Bottom 10"): Medium dense, gray, fine to medium SAND, trace Silt | | |

| | | |
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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 10. Rollerbit ahead to 34'. |
| 4-10 LOOSE | 2-4 SOFT | 11. Rollerbit ahead to 39'. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 12. Rollerbit ahead to 44'. |
| 30-50 DENSE | 8-15 STIFF | 13. Drill ahead to 49'. |
| >50 VERY DENSE | 15-30 V. STIFF | 14. Drill ahead to 54'. Revert drilling mud introduced to ±54'. (Casing at 54') |
| | >30 HARD | 15. Drill ahead to 59'. Collect S-16. Drive casing to 59'. |
| | | 16. Drill ahead to 64'. 4-21-04 drive casing to 64'. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | |
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| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. |
| | KeySpan LNG Terminal | GZ-7 (C) |
| | Providence, Rhode Island | SHEET 3 of 5 |
| | | FILE NO. 32784 |
| | | CHKD BY DMA |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | | S-19 | 24/18 | 74-76 | 10-13 | Dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | 17 | OUTWASH DEPOSITS |
| | | | | | 19-19 | | | |
| 80 | | S-20 | 24/14 | 79-81 | 16-13 | Medium dense, gray, fine to medium SAND, trace Silt | | |
| | | | | | 15-14 | | | |
| 85 | | S-21 | 24/16 | 85-87 | 20-17 | Dense, gray, fine to coarse (-) SAND, trace Silt | | |
| | | | | | 16-18 | | | |
| 90 | | S-22 | 24/20 | 89-91 | 20-15 | Dense, gray, fine to medium SAND, trace Silt | | |
| | | | | | 20-18 | | | |
| 95 | | S-23 | 24/6 | 94-96 | 25-28 | Very dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | | |
| | | | | | 26-18 | | | |
| 100 | | S-24 | 24/18 | 99-101 | 17-20 | Dense, gray, fine to medium SAND, little Silt | | |
| | | | | | 21-20 | | | |
| 105 | | S-25 | 24/19 | 104-106 | 14-12 | Medium dense, gray, fine to medium SAND, little Silt | | |
| | | | | | 12-15 | | | |
| 110 | | S-26 | 24/20 | 109-111 | 18-19 | Dense, gray, fine to medium SAND and SILT | | |
| | | | | | 28-37 | | | |
| 115 | | S-27 | 24/12 | 114-116 | 19-18 | Dense, gray, fine to coarse (-) SAND and SILT, trace fine Gravel | | |
| | | | | | 17-17 | | | |

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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 17. Drill ahead to 85'. Cobble encountered at 84'. |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 120 | | S-28 | 24/12 | 119-121 | 19-27 | Very dense, gray, fine to coarse (-) SAND, some Silt | | |
| | | | | | 28-24 | | | |
| 125 | | S-29 | 24/20 | 124-126 | 23-17 | Dense, gray, fine to coarse (-) SAND, little Silt, trace fine Gravel | | |
| | | | | | 17-16 | | | |
| 130 | | S-30 | 24/12 | 129-131 | 23-21 | (Top 9"): Dense, gray, fine to coarse (-) SAND, some Silt (Bottom 3"): Dense, gray, fine SAND and SILT | | |
| | | | | | 17-19 | | | |
| 135 | | S-31 | 24/12 | 134-136 | 35-31 | Very dense, gray, fine to coarse (-) SAND, some Silt | | 18 19 |
| | | | | | 29-33 | | | |
| 140 | | S-32 | 24/18 | 139-141 | 33-17 | Dense, gray, fine to coarse (-) SAND, some Silt | | |
| | | | | | 23-22 | | | |
| 145 | | S-33 | 24/12 | 144-146 | 67-71 | Very dense, gray, fine to coarse SAND, some Silt | | |
| | | | | | 64-30 | | | |
| 150 | | S-34 | 24/20 | 149-151 | 12-8 | Medium dense, gray, fine SAND, little Silt | | 21 22 |
| | | | | | 12-26 | | | |
| 155 | | S-35 | 24/24 | 154-156 | 27-32 | Very dense, gray, fine SAND, little Silt | | 23 24 |
| | | | | | 26-29 | | | |

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|------------------------------------|------------------------------------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 18. Hole collapsed (Bottom ±35') (Casing at ±64). |
| 4-10 LOOSE | 2-4 SOFT | 19. ±2" lens fine sand and silt |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 20. After sample S-33 spin casing from 64' to 145'. |
| 30-50 DENSE | 8-15 STIFF | 21. Two hours down time (rig repairs). |
| >50 VERY DENSE | 15-30 V. STIFF | 22. Drill ahead, approximately 3 feet of cobbles, then casing installed to ±149'. |
| | >30 HARD | 23. 0.5 hours downtime (oil pressure leak). |
| | | 24. Drill ahead collapsed, install casing to ±154'. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 160 | | S-36 | 24/20 | 159-161 | 46-47 | Very dense, gray, fine SAND, and Silt | 25 | GLACIAL TILL |
| | | | | | 58-65 | | | |
| 165 | | S-37 | 6/4 | 164-164.5 | 100/4" | (Top 2"): Very dense, gray, fine to medium SAND and SILT | 26 | |
| | | | | | 23/2" | (Bottom 2"): Very dense, gray weathered SHALE | | |
| 170 | | S-38 | 0/0 | 169-169 | 50/0" | Refusal with spoon | 27 | |
| | | C-1 | 60/8 | 169-174 | min/ft | Gray, fine GRAVEL | | |
| | | | | RQD = 0 % | 5 | | | |
| | | | | | 3 | | | |
| | | | | | 3 | | | |
| 175 | | | | | 4 | | | |
| | | | | | 3 | | 28 | |
| | | | | | | End of Exploration at ±174' | | |
| 180 | | | | | | | | |
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| 185 | | | | | | | | |
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| 190 | | | | | | | | |
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| 195 | | | | | | | | |
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| 200 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 25. Drill ahead install casing to ±159'. 26. Drill ahead from ±159' to ±164'. Casing installed to ±164', Replace pressure gauge. 27. Install casing to ±169'. 28. Casing to ±173'. |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL;
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-7 (D) |
| | KeySpan LNG Terminal | SHEET | 1 of 1 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

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|------------|-----------------------------|----------------------|-------------------------------|
| BORING CO. | Guild | BORING LOCATION | See Exploration Location Plan |
| FOREMAN | Tom Paquette, John Mederios | GROUND SURFACE ELEV. | ±14' |
| GZA ENG. | Joanne Kissinger | DATE START | 4/27/04 |
| | | DATE END | 4/27/04 |

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|---|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | | | | | |
| CASING SIZE: 5" OTHER: | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------------------------|---|-------------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | | | | | The objective of this boring is to drill to approximately ±27' to collect two undisturbed samples. Spoon samples not needed. Obstructions encountered where noted. | 1 | 0.31 FILL |
| | | | | | | | ±1.4' OBSTRUCTION | |
| | | | | | | | 2 | FILL |
| | | | | | | | ±3.7' OBSTRUCTION | |
| | | | | | | | 3 | ±4.5' FILL |
| | | | | | | | 4 | ±7' OBSTRUCTION |
| | | | | | | | | FILL |
| | | | | | | | | CONCRETE OBSTRUCTION |
| | | | | | | | | ±12.3' |
| | | | | | | | 5 | |
| | | | | | | | 6 | WOOD OBSTRUCTION |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 15 | | | | | End of Exploration at ±14' | | | |
| 20 | | | | | | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |

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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Through five obstructions encountered. |
| 4-10 LOOSE | 2-4 SOFT | 6. Casing drive shoe left in hole. Casing shoe broke 36" wrench. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 7. Hole was relocated approximately 10' away. |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-7 (E) |
| | KeySpan LNG Terminal | SHEET | 1 of 1 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

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| BORING CO. | Guld | BORING LOCATION | See Exploration Location Plan |
| FOREMAN | Tom Paquette, John Medeiros | GROUND SURFACE ELEV. | ±14' DATUM MLLW |
| GZA ENG. | Joanne Kissinger | DATE START | 4/28/04 DATE END 4/28/04 |

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|---|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 5" OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------------------------|---|--------|---|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | | | | | The objective of this boring is to drill to approximately 27' depth to collect two undisturbed samples. Spoon samples not needed | | |
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| | | UP-1 | 24/23 | 27-29 | | | | UNDISTURBED PISTON SAMPLE OF ORGANIC SILT |
| | | | | | | | | |
| | | UP-2 | 24/22 | 29-31 | | | | UNDISTURBED PISTON SAMPLE OF ORGANIC SILT |
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| | | | | | End of Exploration at ±31' | | | |

| <table border="1"> <tr> <th>GRANULAR SOILS BLOWS/FT DENSITY</th> <th>COHESIVE SOILS BLOWS/FT DENSITY</th> </tr> <tr> <td>0-4 VERY LOOSE</td> <td><2 VERY SOFT</td> </tr> <tr> <td>4-10 LOOSE</td> <td>2-4 SOFT</td> </tr> <tr> <td>10-30 MEDIUM DENSE</td> <td>4-8 M. STIFF</td> </tr> <tr> <td>30-50 DENSE</td> <td>8-15 STIFF</td> </tr> <tr> <td>>50 VERY DENSE</td> <td>15-30 V. STIFF</td> </tr> <tr> <td></td> <td>>30 HARD</td> </tr> </table> | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | 0-4 VERY LOOSE | <2 VERY SOFT | 4-10 LOOSE | 2-4 SOFT | 10-30 MEDIUM DENSE | 4-8 M. STIFF | 30-50 DENSE | 8-15 STIFF | >50 VERY DENSE | 15-30 V. STIFF | | >30 HARD | REMARKS: |
|--|------------------------------------|------------------------------------|----------------|--------------|------------|----------|--------------------|--------------|-------------|------------|----------------|----------------|--|----------|----------|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | | | | | | | | | | | | | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | | | | | | | | | | | | | | |
| 4-10 LOOSE | 2-4 SOFT | | | | | | | | | | | | | | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | | | | | | | | | | | | | | |
| 30-50 DENSE | 8-15 STIFF | | | | | | | | | | | | | | |
| >50 VERY DENSE | 15-30 V. STIFF | | | | | | | | | | | | | | |
| | >30 HARD | | | | | | | | | | | | | | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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|--|--|----------------------|--------|
| GEOTECHNICAL BORING LOG GEOTECH/GEOHYDROLOGICAL CONSULTANTS 1. BROADWAY, PROVIDENCE, RHODE ISLAND A GEOENVIRONMENTAL INC. | PROJECT | REPORT OF BORING NO. | GZ-101 |
| | KeySpan LNG Control Building Expansion | SHEET | 1 of 1 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| | | | |
|--------------|----------------------------------|----------------------|-------------------------------|
| BORING CO. | Guild | BORING LOCATION | See Exploration Location Plan |
| FOREMAN | Tom Paquette, John Medeiros | GROUND SURFACE ELEV. | ±16' |
| LOGGING ENG. | Joanne Kissinger/ Daniel E. Oaks | DATE START | 4/28/04 |
| | | DATE END | 4/29/04 |

| | | | | | |
|---|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 4" OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | 4/29/04 | | 8.2' | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|---|---|--------|--|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | P | S-1 | 24/15 | 0-2 | 2-5 | Medium dense, brown/gray, fine to coarse SAND, trace fine | 1 | POSSIBLE FILL ±6' SAND AND SILT ±8' |
| | U | | | | 17-21 | Gravel, trace Silt | | |
| | S | S-2 | 24/17 | 2-4 | 21-42 | Very dense, brown, fine to coarse SAND, trace fine Gravel, | | |
| | H | | | | 23-25 | trace Silt | | |
| | 17 | S-3 | 24/13 | 4-6 | 13-12 | Medium dense, brown, fine to coarse SAND, trace fine Gravel, | | |
| | 34 | | | | 11-14 | trace Silt | | |
| | 40 | S-4 | 24/18 | 6-8 | 13-13 | Medium dense, brown, fine SAND and SILT | | |
| | 41 | | | | 15-18 | | | |
| | P | S-5 | 24/13 | 8-10 | 10-10 | Medium dense, brown, fine to coarse SAND, little fine Gravel, | | |
| | U | | | | 8-9 | trace Silt | | |
| 10 | S | | | | | | 2 | ±31' GLACIAL TILL |
| | H | | | | | | | |
| | ↓ | | | | | | | |
| | 58 | S-6 | 24/17 | 14-16 | 4-13 | Dense, brown, fine to coarse SAND, trace fine Gravel, trace | | |
| | 78 | | | | 24-36 | Silt | | |
| | 90 | | | | | | | |
| | 106 | | | | | | | |
| | 132 | | | | | | | |
| | 20 | S-7 | 24/16 | 19-21 | 24-27 | Dense, brown, fine to coarse SAND, some Silt, trace fine Gravel | | |
| | | | | | 22-20 | | | |
| 20 | | | | | | | 3 | OUTWASH DEPOSITS |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | S-8 | 24/12 | 24-26 | 14-11 | Medium dense, brown, fine to coarse SAND, little Silt, trace fine | | |
| | | | | | 13-30 | Gravel | | |
| 30 | | | | | | | 2 | ±31' GLACIAL TILL |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | S-9 | 24/10 | 29-31 | 24-18 | Dense, brown/gray, fine GRAVEL, trace (+) coarse Gravel | | |
| | | | | | 20-27 | | | |
| | | | | | | | | |
| | S-10 | 24/20 | 31-33 | 11-21 | Dense, brown, fine to coarse SAND, little fine Gravel, trace Silt | | | |
| | | | | 24-30 | | | | |
| End of Exploration at ±33' | | | | | | | | |

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|--|--|---|
| GRANULAR SOILS BLOWS/FT DENSITY 4 VERY LOOSE 0 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE 0 VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Groundwater encountered at ±8'. 2. From 29' to 31' drove a piece of coarse gravel in tip of spoon. Sand was washed out of sample. 3. Observation well installed to 20': screen from 20' to 10', roadbox at ground surface. |
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NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | |
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| GEOTECHNICAL BORING LOG GEOTECH/GEOHYDROLOGICAL CONSULTANTS PROVIDENCE, RHODE ISLAND 100 BROADWAY, PROVIDENCE, RHODE ISLAND 02903 GEOTECHNICAL BORING LOG | PROJECT KeySpan LNG Control Building Expansion Providence, Rhode Island | REPORT OF BORING NO. GZ-102 SHEET 1 of 2 FILE NO. 32784 CHKD BY DMA |
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| DRILLING CO. Guild SUPERVISOR Tom Paquette, John Medeiros LOGGING ENG. Joanne Kissinger | BORING LOCATION See Exploration Location Plan GROUND SURFACE ELEV. ±16' DATUM MLLW DATE START 5/05/04 DATE END 5/06/04 |
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| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 4" OTHER: | GROUNDWATER READINGS DATE TIME WATER CASING STABILIZATION TIME 5/5/04 ±6' |
|---|---|

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION | |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|---|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | | |
| 5 | | S-1 | | 0-2 | hand | Loose, brown, fine to coarse (-) SAND, little fine to coarse Gravel, little Silt | ±1' | TOPSOIL | |
| | | | | | shovel | | | | |
| | | S-2 | | 2-4 | hand | | | | |
| | | | | | shovel | | | | |
| | | S-3 | 24/23 | 4-6 | 5-8 | | | | Medium dense, tan, fine to medium SAND, little Silt |
| 10 | | | | | | 3 | ±6' | SAND AND SILT | |
| | | S-4 | 24/23 | 6-8 | 10-10 | | | | Medium dense, tan, fine to medium SAND and SILT (wet) |
| | | | | | 11-10 | | | | |
| 15 | | | | | | 3 | ±6' | SAND AND SILT | |
| | | S-5 | 24/23 | 8-10 | 6-7 | | | | Medium dense, tan, fine to medium SAND, little Silt (wet) |
| 20 | | | | | | 3 | ±6' | SAND AND SILT | |
| | | | | | 8-7 | | | | |
| | | S-6 | 24/15 | 14-16 | 8-10 | | | | Medium dense, tan, fine to medium SAND, little Silt (wet) |
| 25 | | | | | | 3 | ±6' | SAND AND SILT | |
| | | | | | 10-10 | | | | |
| | | S-7 | 24/4 | 19-21 | 5-6 | | | | Medium dense, brown, fine to coarse (-) SAND and fine to coarse Gravel, little Silt (wet) |
| 30 | | | | | | 3 | ±6' | SAND AND SILT | |
| | | | | | 9-9 | | | | |
| | | S-8 | 24/12 | 24-26 | 5-9 | | | | Medium dense, brown, fine to coarse (-) SAND, some fine to coarse Gravel, little Silt (wet) |
| 35 | | | | | | 3 | ±6' | SAND AND SILT | |
| | | | | | 10-10 | | | | |
| | | S-9 | 24/18 | 29-31 | 5-5 | | | | Medium dense, brown, fine to medium SAND, little Silt (wet) |
| | | | | | | 3 | ±6' | SAND AND SILT | |
| | | | | 8-11 | | | | | |

| | | |
|--|--|---|
| GRANULAR SOILS BLOWS/FT DENSITY 4 VERY LOOSE 0 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE 0 VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Samples S-1 and S-2 obtained by hand digging. 2. Drilled ahead of casing. 3. Groundwater encountered at ±6'. |
|--|--|---|

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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|--|--|
| DRILLING CO. <u>New Hampshire Boring</u> OPERATOR <u>Charlie O'Donnel</u> GZA ENG. <u>Matthew Page</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>10 ft</u> DATUM <u>MLLW</u> DATE START <u>04/07/05</u> DATE END <u>04/08/05</u> |
|--|--|

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE: 4", 3" OTHER:

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 24/10 | 0-2 | 8-10 | Medium dense, light brown, fine to medium SAND, some Silt, trace Asphalt | 1 | FILL |
| | P | | | | 8-20 | | | |
| | P | S-2 | 24/12 | 2-4 | 16-13 | Medium dense, dark brown, fine to coarse SAND, little Silt, trace fine to coarse Gravel, trace Asphalt | | |
| | P | | | | 13-7 | | | |
| | P | S-3 | 24/4 | 4-6 | 8-4 | Loose, orange/dark brown, fine to coarse SAND, little Silt, trace fine to coarse Gravel (wet) | | |
| | P | | | | 3-2 | | | |
| | P | S-4 | 24/10 | 6-8 | 2-1 | Very loose, dark brown, fine to coarse SAND, some Silt, trace fine Gravel (petro odor) | | |
| | P | | | | 1-1 | | | |
| 10 | 25 | S-5 | 24/8 | 9-11 | 2-2 | Loose, dark brown, fine to coarse SAND, little Silt, trace fine to coarse Gravel (petro odor, oil sheen) | | |
| | 40 | | | | 2-3 | | | |
| | 30 | S-6 | 24/14 | 11-13 | 21-28 | Dense, dark brown, fine to coarse SAND, little Silt, trace (-) fine Gravel (petro odor, oil sheen) | | |
| | 54 | | | | 16-13 | | ±13' | |
| | P | S-7 | 24/12 | 13-15 | 20-8 | Medium dense, gray/dark brown, fine to coarse SAND, little Silt, trace fine to coarse Gravel (petro odor) | | |
| 15 | P | | | | 9-9 | | 3 | |
| | 25 | S-8 | 24/12 | 15-17 | 10-10 | Medium dense, gray, fine to coarse SAND, little Silt, trace fine to coarse Gravel (petro odor) | | |
| | 19 | | | | 8-8 | | | |
| | 22 | S-9 | 24/14 | 17-19 | 10-6 | Medium dense, gray, fine to coarse SAND, little Silt, trace fine to coarse Gravel (petro odor) | | |
| | 24 | | | | 7-5 | | | |
| | 26 | S-10 | 24/3 | 19-21 | 4-5 | Loose, gray, fine to coarse SAND, little Silt, trace fine Gravel | | |
| | P | | | | 1-1 | | ±21' | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| 25 | P | S-11 | 24/12 | 24-26 | 2-WHO | Very loose, gray, fine SAND and SILT | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | S-12a | 24/12 | 29-31 | 9-11 | S-12a: (top 4") Medium dense, black, organic SILT, trace fine Sand, trace fine Gravel | | |
| | P | S-12b | | | 10-8 | S-12b: (bottom 8") Medium dense, tan, fine SAND, little Silt, trace fine Gravel | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. P indicates casing pushed. S indicates casing spun. |
| 4-10 LOOSE | 2-4 SOFT | 2. Washed ahead of casing from 8 to 9 feet, took S-5 and S-6, casing driven 8 to 13', washed to bottom of casing at 13'. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Took S-7 washed to 15', took S-8 and S-9, casing driven 13 to 19', washed to bottom of casing at 19' |
| 10-50 DENSE | 8-15 STIFF | 4. Took S-10, casing pushed to 25' washed to 24' took S-11. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing pushed 24 to 29' washed to 29', took S-12. |
| | >30 HARD | 6. Cuttings at 28' possible organic silt and sand. |

NOTES:

- STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
- WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|---------|------------|----------|---|--------|---|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | P | S-13 | 24/10 | 34-36 | 8-8 | Medium dense, light brown, fine to medium SAND, some Silt, | 7 | SAND ±37' SILT (LAMINATED) |
| | P | | | | 9-8 | trace (-) fine Gravel | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| 1 | P | S-14 | 24/14 | 39-41 | 8-7 | Medium dense, light brown SILT (Laminated Lenses of fine Sand) | 8 | |
| | P | | | | 7-10 | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| 15 | P | S-15a | 24/18 | 44-46 | 8-12 | S-15a: (top 12") Medium dense, light brown/gray SILT | 9 | ±46' SAND |
| | P | S-15b | | | 13-12 | (Laminated Lense of fine Sand) | | |
| | P | | | | | S-15b: (bottom 6") Medium dense, brown/gray, fine to medium SAND, | | |
| | P | | | | | trace Silt, trace (-) fine Gravel | | |
| | P | | | | | | | |
| 50 | P | S-16 | 24/12 | 49-51 | 45-57 | Very dense, brown/gray, fine to coarse SAND, little Silt, little fine | 9 | |
| | S | | | | 43-60 | to coarse Gravel | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 3 | S | S-17 | 24/12 | 54-56 | 18-26 | Dense, brown/gray, fine to medium SAND, trace Silt | 10 | |
| | P | | | | 18-30 | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| 60 | P | S-18 | 24/14 | 59-61 | 21-23 | Dense, gray, fine to coarse SAND, trace Silt | 11 | |
| | P | | | | 21-21 | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| 05 | P | S-19 | 24/8 | 64-66 | 68-27 | Very dense, gray, fine to coarse SAND, little Silt, little fine to | 12 | |
| | P | | | | 37-33 | coarse Gravel | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
|) | P | S-20 | 24/10 | 69-71 | 34-18 | Dense, gray, fine to coarse SAND, little Silt, little fine to coarse | 13 | |
| | P | | | | 18-19 | Gravel | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 7. Washed ahead of casing from 29 to 34, took S-13, switched from water to drilling mud, casing pushed from 29 to 34'. Washed to 39', took S-14. |
| 4-10 LOOSE | 2-4 SOFT | 8. Washed ahead to 44', took S-15, washed ahead to 49', Took S-16. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 9. Washed ahead to 54", took S-15, washed ahead to 49', took S-16. |
| 30-50 DENSE | 8-15 STIFF | 10. Approximately 2-inch of running sands. |
| >50 VERY DENSE | 15-30 V. STIFF | 11. Washed ahead to 64', took S-19. |
| | >30 HARD | 12. Washed ahead to 69', switched to 3" casing, casing advanced from 34 to 71'. Washed to 69', took S-20. |

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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | P | S-21 | 24/8 | 74-76 | 42-32 | Very dense, gray, fine to coarse SAND, some fine to coarse | 13 | SAND |
| | S | | | | 46-24 | Gravel, little Silt | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 80 | S | S-22 | 24/8 | 79-81 | 18-14 | Medium dense, gray, fine to coarse SAND, little (-) Silt | 14 | SAND |
| | S | | | | 15-14 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 85 | S | S-23 | 16/6 | 84-86 | 40-46 | Very dense, gray, fine to coarse SAND, some Silt, little fine to coarse Gravel | 15 | GLACIAL TILL |
| | S | | | | 100/4" | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-24 | 24/0 | 89-91 | 36-18 | NO RECOVERY | 16 | GLACIAL TILL |
| | S | | | | 22-27 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 95 | S | S-25 | 24/4 | 94-96 | 32-19 | Dense, gray, fine to coarse SAND, some fine to coarse Gravel, little (+) Silt | 16 | GLACIAL TILL |
| | | | | | 17-15 | | | |
| End of Exploration at ±96' | | | | | | | | |

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|-------------------------|-------------------------|--|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: 13. Casing spun from 69 to 74', washed to 74', took S-21. 14. Washed ahead to 79', casing spun to 79', washed to 79, took S-22. 15. Washed ahead to 84', took S-23, washed ahead to 89', casing spun to 89', took to S-24. 16. Casing spun to 94', washed to 94', took S-25. Groundwater monitoring well installed; screen from 20', riser from 10', filter sand from 40', bentonite seal from 9', auger cuttings from 8', capped with road box and cement. |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 0-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | |
|--|--|
| DRING CO. <u>New Hampshire Boring</u> CREMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Daniel Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>16 ft</u> DATUM <u>MLLW</u> DATE START <u>04/01/05</u> DATE END <u>04/01/05</u> |
|--|--|

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE: _____ OTHER: _____

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|-----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | S-1 | 11/8 | 0-2 | 19-105/5" | S-1: Very dense, brown, fine to coarse SAND, some (+) fine to coarse Gravel, trace (+) Silt | 2 | 4" Coarse Gravel |
| | | S-2 | 24/12 | 2-4 | 22-21 | S-2: Dense, brown, fine to coarse SAND, some (-) fine to coarse Gravel, trace (+) Silt | 2 | SAND AND GRAVEL (FILL) |
| | | S-3A | 24/10 | 4-6 | 4-4 | S-3A: (top 2") Loose, brown, fine to coarse SAND and fine to coarse Gravel, trace Silt | | |
| | | S-3B | | | 3-2 | S-3B: (bottom 8") Loose, red/brown, fine to coarse SAND, little (+) Silt, trace (+) fine Gravel, trace (-) Ash | | |
| | | S-4 | 11/2 | 6-7 | 24-100/5" | S-4: Very dense, black, coarse GRAVEL, trace (+) Silt | 3 | |
| 10 | | | | | | End of Exploration at ±7' | 4 | |
| 15 | | | | | | | | |
| 20 | | | | | | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |
| 35 | | | | | | | | |
| 40 | | | | | | | | |
| 45 | | | | | | | | |
| 50 | | | | | | | | |
| 55 | | | | | | | | |
| 60 | | | | | | | | |
| 65 | | | | | | | | |
| 70 | | | | | | | | |
| 75 | | | | | | | | |
| 80 | | | | | | | | |

| | | | | |
|---|--|---|--|---|
| GRANULAR SOILS BLOWS/FT DENSITY | VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY | <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Spoon refusal at 1' while obtaining sample. Boring relocated 5' to East 2. Begin 4.25" Hollow Stem Auger due to boulders to 4' below ground surface 3. Auger advanced to 7' below ground surface 4. Driller lost steel tool (Socket/bolt) and cannot retrieve due to collapse. |
|---|--|---|--|---|

NOTES:

- 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
- 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | | | | | |
|---|--|--------------------------|--------------------------|---|--|---|-------------------------------|
| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | | PROJECT | | REPORT OF BORING NO. GZ-202A | | | |
| | | Keyspan LNG Facility | | SHEET 1 of 3 | | | |
| | | Providence, Rhode Island | | FILE NO. 32784.01 | | | |
| | | | | CHKD BY AH | | | |
| DRILLING CO. <u>New Hampshire Boring</u> | BORING LOCATION <u>See Exploration Location Plan</u> | | | | | | |
| DRILLER <u>Charlie O'Donnel</u> | GROUND SURFACE ELEV. <u>16 ft</u> | | DATUM <u>MLLW</u> | | | | |
| ENGINEER <u>Daniel Oaks/Matthew Page</u> | DATE START <u>04/04/05</u> | | DATE END <u>04/06/05</u> | | | | |
| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | | | GROUNDWATER READINGS | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | | | DATE | TIME | WATER | | |
| CASING SIZE: <u>5 1/4" / 3"</u> OTHER: | | | 04/06/05 | 11:30 am | 9.2' | | |
| | | | | | 50 | | |
| | | | | | 20 Minutes | | |
| DEPTH | CASING BLOWS | SAMPLE | | SAMPLE DESCRIPTION | | R | STRATUM DESCRIPTION |
| | | NO | PEN./REC | DEPTH (FT) | BURMISTER CLASSIFICATION | K | |
| | S | | | | | | ±1' FILL |
| | S | | | | | 1 | |
| | S | | | | | 2 | CORED THROUGH CONCRETE DEBRIS |
| | S | | | | | | |
| | S | | | | | | |
| | S | | | | | | |
| | S | | | | | | |
| | S | | | | | | |
| 10 | S | | | | | | |
| | S | | | | | | |
| | S | | | | | | |
| | S | | | | | | |
| | S | | | | | | |
| | S | | | | | | ±12.5' |
| 15 | S | S-1 | 24/24 | 13-15 | 4-4 Medium dense, gray, fine to coarse SAND, some (+) fine to | 3 | |
| | S | | | 11-15 | coarse Gravel, trace (-) Silt (Petro Odor) | 4 | |
| | S | S-2 | 24/3 | 15-17 | 12-10 Medium dense, gray, fine to coarse SAND, some fine to coarse | 5 | SAND |
| | S | | | 12-18 | Gravel, trace (-) Silt | 6 | AND |
| | S | S-3A | 24/12 | 17-19 | 47-76 S-3A: (top 6") Very dense, black/gray, fine to coarse GRAVEL, | 7 | GRAVEL |
| | S | S-3B | | 57-31 | little (+) fine to coarse Sand, trace (+) Silt | | |
| 20 | S | S-4 | 24/10 | 19-21 | 13-11 S-3B: (bottom 6") Very dense, gray/brown, fine to coarse SAND, | 8 | |
| | S | | | 11-11 | little (+) fine to coarse Gravel, trace (+) Silt | | |
| | S | S-5 | 24/12 | 21-23 | 15-14 S-4: Medium dense, gray, fine to coarse SAND, some fine to | 9 | |
| | S | | | 15-24 | coarse Gravel, trace (+) Silt (Petro odor) | | |
| 25 | S | S-6 | 24/8 | 23-25 | 16-16 S-5: Medium dense, gray, fine to coarse SAND, some fine to | 10 | |
| | S | | | 47-68 | coarse Gravel, trace (+) Silt (Petro odor) | | |
| | S | S-7 | 24/12 | 25-27 | 28-56 S-6: Very dense, gray, fine to coarse SAND, some (+) fine to | | |
| | S | | | 23-20 | coarse Gravel, trace (+) Silt | | |
| | S | S-8 | 24/12 | 27-29 | 18-23 S-7: Very dense, gray, fine to coarse SAND, some (+) fine to | | |
| | S | | | 23-22 | coarse Gravel, little Silt | | |
| | S | S-9 | 24/10 | 29-31 | 13-18 S-8: Dense, gray, fine to coarse SAND, some fine to coarse | | |
| | S | | | 17-12 | Gravel, trace (+) Silt | | |
| | S | S-10 | 24/12 | 31-33 | 20-33 S-9: Dense, gray, fine to coarse SAND, some fine to coarse | | |
| | S | | | 17-13 | Gravel, trace (+) Silt | | |
| | S | | | | S-10: Very dense, gray, fine to coarse SAND, some fine to | | |
| | S | | | | coarse Gravel, trace (+) Silt | 11 | |
| GRANULAR SOILS | | COHESIVE SOILS | | REMARKS: | | | |
| BLOWS/FT DENSITY | | BLOWS/FT DENSITY | | Auger refusal at ± 2' at initial location, boring location relocated ± 5' northwest | | | |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | 1. Cutting 5" core of concrete from 1.0' to 4.5' with PW casing and cutting shoe. | | 6. Proceeding open hole 15' to 19'. | |
| 4-10 | LOOSE | 2-4 | SOFT | 2. Coring concrete from 4.5' to 12.5' with HV corebarrel. | | 7. Casing advanced to 18' then sample collected 19-21'. | |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | 3. Casing advanced to 5', then sample collected from 13' to 15'. | | 8. Casing advanced to 23' then 23-25' sample collected | |
| 0-50 | DENSE | 8-15 | STIFF | 4. Casing advanced to 15', then sample collected 15-17'. | | 9. Casing advanced to 25' then 25-27' sample collected. | |
| >50 | VERY DENSE | 15-30 | V. STIFF | 5. Pushing possible boulder chip. | | 10. Casing advanced to 29' then 29-31' sample collected | |
| | | >30 | HARD | 11. GZ-102A is located 4' West from GZ-102. | | | |
| NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. | | | | | | | |
| 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE | | | | | | | |
| GZA | | | | | | BORING NO. GZ-202A | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-11 | 24/11 | 39-41 | 26-22 | Dense, gray, fine to coarse SAND, some fine to coarse Gravel, | 12 | SAND AND GRAVEL |
| | S | | | | 17-22 | trace Silt | 13 | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 45 | S | S-12 | 24/10 | 44-46 | 20-21 | Dense, gray, fine to coarse SAND, little fine to coarse Gravel, | | |
| | S | | | | 19-15 | trace (+) Silt | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-13 | 24/16 | 49-51 | 18-18 | Dense, gray, fine to coarse SAND, trace Silt, trace (-) fine | | SAND |
| | S | | | | 20-25 | Gravel | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 5 | S | S-14 | 24/8 | 54-56 | 19-19 | Dense, dark gray, fine to medlum SAND, trace (+) Silt | | |
| | S | | | | 16-21 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 60 | S | S-15 | 24/10 | 59-61 | 16-11 | Medium dense, gray SILT and fine Sand | | SILT AND SAND |
| | S | | | | 14-11 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 65 | S | S-16 | 24/15 | 64-66 | 26-29 | Very dense, gray, fine to coarse SAND, some Silt, little fine to | | |
| | S | | | | 22-23 | coarse Gravel | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 70 | S | S-17 | 24/4 | 69-71 | 67-53 | Very dense, gray, fine to coarse SAND and fine to coarse | 14 | SAND AND GRAVEL |
| | S | | | | 26-34 | Gravel, trace Silt | 15 | |
| | S | | | | | | | |
| | S | | | | | | | |
| 75 | S | | | | | | | |

| | | | |
|------|---|---|---|
| | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 12. Casing is advanced to 34' (washing ahead) then S-11 (39-41') collected. 13. Collected bag sample B-2, B-2R. 14. Stone stuck in tip of spoon. 15. Borehole collapsed at 72'. Switched to 3-inch casing, advanced casing from 34' to 74'. |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF |
| 0-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | S | S-18 | 24/5 | 74-76 | 14-12 | Medium dense, dark gray, fine to coarse SAND, little fine to coarse Gravel, little Silt | | SAND AND GRAVEL |
| | S | | | | 12-12 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-19 | 24/10 | 79-81 | 17-20 | Dense, dark gray, fine to coarse SAND, little (+) fine to coarse Gravel, little Silt | | |
| | S | | | | 16-20 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 95 | S | S-20 | 24/10 | 84-86 | 56-40 | Very dense, dark gray, fine to coarse SAND, some fine to coarse Gravel, little Silt | | |
| | S | | | | 33-28 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-21 | 24/8 | 89-91 | 24-15 | Medium dense, dark gray, fine to coarse SAND, some Silt, trace fine Gravel | 16 | GLACIAL TILL |
| | | | | | 14-13 | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 5 | | S-22 | 24/14 | 94-96 | 14-16 | Dense, dark gray, fine to coarse SAND, some Silt, trace fine Gravel | 17 | |
| | | | | | 17-17 | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 100 | | S-23 | 24/4 | 99-101 | 10-14 | Dense, dark gray, fine to coarse SAND, some (+) Silt, trace fine to coarse Gravel | | |
| | | | | | 17-15 | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 105 | | S-24 | 24/12 | 104-106 | 26-20 | Dense, dark gray, fine to coarse SAND, some Silt, trace fine to coarse Gravel | | |
| | | | | | 22-29 | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 115 | | | | | | End of Exploration at ±106' | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | | | | |
|------------------------------------|------------------------------------|--|-------|-----------|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 16. Rollerbit ahead of casing from 90 to 104'. 17. Approximately 6" of running sands. | | |
| 0-4 | VERY LOOSE | | <2 | VERY SOFT |
| 4-10 | LOOSE | | 2-4 | SOFT |
| 0-30 | MEDIUM DENSE | | 4-8 | M. STIFF |
| 10-50 | DENSE | | 8-15 | STIFF |
| >50 | VERY DENSE | | 15-30 | V. STIFF |
| | | >30 | HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|----------------------|-------------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-203 (OW) |
| | Keyspan LNG Facility | SHEET | 1 of 3 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| | | | |
|------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| OPERMAN | Charlie O'Donnel | GROUND SURFACE ELEV. | 18 ft |
| GZA ENG. | Daniel Oaks | DATE START | 03/30/05 |
| | | DATE END | 04/01/05 |
| | | DATUM | MLLW |

| | | | | | |
|---|----------------------|----------|-------|---------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | 03/30/05 | 10:30 am | 12.97 | 14' | 40 (Tidal) minutes |
| | 05/20/05 | | Well | 51 Days | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|-----------|------------|-----------|---|--------|------------------------|
| | | NO | PENI./REC | DEPTH (FT) | BLOWS/6" | | | |
| 10 | | S-1 | 24/12 | 0-2 | 7-9 | Medium dense, brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt | 1 2 | FILL |
| | | S-2 | 24/20 | 2-4 | 13-15 | Dense, brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt | | |
| | | S-3 | 24/10 | 4-6 | 13-14 | Medium dense, brown/tan, fine to coarse SAND, little fine to coarse Gravel, trace Silt | | |
| | | S-4a | 24/20 | 6-8 | 22-31 | S-4a: (top 14") Very dense, brown, fine to coarse SAND, little (+) fine to coarse Gravel, trace Silt, trace brick | | |
| | | S-4b | | | 38-42 | | | |
| | | S-5 | 24/12 | 8-10 | 19-11 | S-4b: (bottom 6") Very dense, black/brown, fine to coarse SAND, little fine to coarse Gravel, little Brick, trace (+) Ash, trace Silt | | |
| | | S-6 | 24/10 | 10-12 | 8-6 | S-5: Medium dense, brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt | | |
| | | S-7 | 24/12 | 12-14 | 6-4 | S-6: Medium dense, brown, fine SAND some Silt, trace brick (FILL) | | |
| | | S-8 | 21/2 | 14-15.75 | 7-4 | S-7: Loose, brown, fine to coarse SAND, some Silt, trace fine Gravel, trace (+) Brick | | |
| | | | | | 15-104/3" | S-8: Medium dense, Gravel (2" Boulder Chip) in tip of spoon | | |
| | | S-9 | 24/10 | 17-19 | 17-19 | Dense, gray, fine to coarse SAND, little fine to coarse Gravel, trace (+) Silt (Petro Odor) | | |
| | | S-10a | 24/12 | 19-21 | 6-5 | S-10A: (top 9") Medium dense, gray SILT, trace (-) fine Sand | | |
| | | S-10b | | | 9-11 | S-10B: (bot. 3") Medium dense, gray, fine to coarse SAND, little Silt, trace Shells (Petro odor) | | |
| | 25 | | S-11 | 24/12 | 21-23 | 19-18 | | |
| | | S-12 | 24/10 | 23-25 | 6-17 | S-12: Dense, gray, fine to medium SAND, trace (+) Silt, trace (-) fine to coarse Gravel | | |
| | | S-13 | 24/12 | 25-27 | 14-15 | S-13: Dense, gray, fine to medium SAND, little Silt | | |
| | | | | | 18-16 | | | |
| | | S-14 | 24/20 | 29-31 | 6-2 | Soft, gray, organic SILT, trace (-) fine Sand | | |
| | | | | | 2-2 | | | |
| 30 | | UP-1 | 24/10 | 31-33 | push | NO RECOVERY | 4 | ORGANIC SILT |
| | | UP-2 | 24/24 | 33-35 | push | Grey, organic SILT | | |

| <table border="1"> <tr> <th>GRANULAR SOILS</th> <th>COHESIVE SOILS</th> </tr> <tr> <td>BLOWS/FT DENSITY</td> <td>BLOWS/FT DENSITY</td> </tr> <tr> <td>0-4 VERY LOOSE</td> <td><2 VERY SOFT</td> </tr> <tr> <td>4-10 LOOSE</td> <td>2-4 SOFT</td> </tr> <tr> <td>10-30 MEDIUM DENSE</td> <td>4-8 M. STIFF</td> </tr> <tr> <td>30-50 DENSE</td> <td>8-15 STIFF</td> </tr> <tr> <td>>50 VERY DENSE</td> <td>15-30 V. STIFF</td> </tr> <tr> <td></td> <td>>30 HARD</td> </tr> </table> | GRANULAR SOILS | COHESIVE SOILS | BLOWS/FT DENSITY | BLOWS/FT DENSITY | 0-4 VERY LOOSE | <2 VERY SOFT | 4-10 LOOSE | 2-4 SOFT | 10-30 MEDIUM DENSE | 4-8 M. STIFF | 30-50 DENSE | 8-15 STIFF | >50 VERY DENSE | 15-30 V. STIFF | | >30 HARD | REMARKS: 1. Approximately 6" of running sands between 6-8". 2. Rollerbit between 6-8" possible ash in wash water. 3. Rollerbit 15.75 to 17" (sample 15-17) possible boulder cuttings in wash water. 4. Began use of bentonite (mud) in casing at 23' below ground surface. |
|---|------------------|----------------|------------------|------------------|----------------|--------------|------------|----------|--------------------|--------------|-------------|------------|----------------|----------------|--|----------|--|
| GRANULAR SOILS | COHESIVE SOILS | | | | | | | | | | | | | | | | |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | | | | | | | | | | | | | | | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | | | | | | | | | | | | | | | | |
| 4-10 LOOSE | 2-4 SOFT | | | | | | | | | | | | | | | | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | | | | | | | | | | | | | | | | |
| 30-50 DENSE | 8-15 STIFF | | | | | | | | | | | | | | | | |
| >50 VERY DENSE | 15-30 V. STIFF | | | | | | | | | | | | | | | | |
| | >30 HARD | | | | | | | | | | | | | | | | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|---------------------|-------------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO | GZ-203 (OW) |
| | Keyspan LNG Facility | SHEET | 2 of 3 |
| | Providence, Rhode Island | FILE NO | 32784.01 |
| | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | | S-15A | 24/20 | 35-37 | 2-3 | S-15A: (top 16") Medium dense, gray, Organic SILT | ±36.5' | ORGANIC SILT |
| | | S-15B | | | 11-21 | S-15B: (bottom 4") Medium dense, gray, fine to coarse GRAVEL, some fine to coarse Sand, little (+) Organic Silt | | |
| 40 | | S-16A | 24/16 | 39-41 | 4-17 | S-16A: (top 8") Dense, gray SILT, some fine to medium SAND, trace (-) fine Gravel | | SAND |
| | | S-16B | | | 17-19 | S-16B: (bottom 8") Dense, gray/tan, fine to coarse SAND, little Silt, trace (+) fine to coarse Gravel | | |
| 45 | | S-17 | 24/8 | 44-46 | 11-11 | Medium dense, brown, fine to coarse SAND, trace (-) Silt, trace (-) fine Gravel | | |
| | | | | | 13-14 | | | |
| 50 | | S-18 | 24/10 | 49-51 | 15-9 | Medium dense, brown/gray, fine to coarse SAND, some (+) fine to coarse Gravel, trace (+) Silt | | |
| | | | | | 8-8 | | | |
| 55 | | S-19 | 24/12 | 54-56 | 14-23 | Dense, brown/gray, fine to coarse SAND, some (+) fine to coarse Gravel, trace (+) Silt | | |
| | | | | | 27-24 | | | |
| 60 | | S-20 | 24/12 | 59-61 | 19-27 | Very dense, brown/gray/tan, fine to coarse SAND, little (-) fine to coarse Gravel, trace (+) Silt | | |
| | | | | | 34-23 | | | |
| 65 | | S-21 | 24/6 | 64-66 | 21-26 | Very dense, gray, fine to coarse SAND, some fine to coarse Gravel (Boulder Chlp), little Silt | | |
| | | | | | 26-21 | | | |
| 70 | | S-22 | 24/9 | 69-71 | 63-39 | Very dense, gray/tan, fine to coarse GRAVEL and fine to coarse Sand, little (+) Silt | 5. | |
| | | | | | 37-58 | | | |
| 75 | | | | | | | | |

| | | | | |
|------------------------------------|--------------|------------------------------------|-----------|------------------|
| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | 5. Casing at 60' |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 30-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER
MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|------------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | | | |
| 5 | | S-23A | 24/14 | 74-76 | 19-18 | S-23A: (top 11") Very dense, gray SILT | | SILT |
| | | S-23B | | | 24-23 | S-23B: (bottom 3") Very dense, gray SILT, some fine to medium Sand | 6 | |
| 10 | | S-24 | 24/14 | 79-81 | 8-16 | Dense, gray SILT | | SILT |
| | | | | | 24-19 | | 7 | |
| 65 | | S-25 | 24/15 | 84-86 | 27-24 | Dense, gray SILT, little (+) fine Sand, little (+) fine to coarse | | SAND |
| | | | | | 24-19 | Gravel | | |
| 100 | | S-26 | 14/3 | 89-91 | 35-73 | Very dense, gray SILT and fine Sand, little (+) fine Gravel | | TILL |
| | | | | | 103/2" | | | |
| 95 | | S-27 | 24/14 | 94-96 | 28-34 | Very dense, gray, fine to medium SAND, trace (+) Silt | | SAND |
| | | | | | 38-31 | | | |
| 100 | | S-28 | 24/18 | 99-101 | 51-49 | Very dense, gray, fine to medium SAND, little fine to coarse | | TILL |
| | | | | | 53-46 | Gravel, trace (+) Silt | | |
| 05 | | S-29 | 11/10 | 104-106 | 105-120/5" | Very dense, gray, fine to coarse SAND, some (+) Silt, little (+) fine to coarse Gravel (TILL) | 8 | TILL |
| | | | | | | | 9 | |
| | | | | | | End of Exploration at ±105' | | |
| 110 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: | |
|------------------------------------|------------------------------------|----------|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | | 6. Casing advanced to 60', then sample S-23 taken (74-76'). 7. Driller reported 5" cave-in. Casing advanced from 60' to 74' then cleaned out to 79' prior to collecting sample S-24. 8. Proceeding open-hole from 74' to end of exploration. 9. Groundwater monitoring well installed; cuttings and boring collapse from 105' to 20', screened from 10' to 20', filter sand from 21' to 9', bentonite seal from 9' to 8', cuttings from 0-8', capped off with stand pipe to 1' above ground surface and cemented. |
| 4-10 LOOSE | 2-4 SOFT | | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | | |
| 0-50 DENSE | 8-15 STIFF | | |
| >50 VERY DENSE | 15-30 V. STIFF | | |
| | >30 HARD | | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | |
|---|---------------------------------|--------------------------------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEO/TECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT Keyspan LNG Facility | REPORT OF BORING NO. GZ-204 |
| | PROVINGENCE, RHODE ISLAND | SHEET 1 of 1 |
| | | FILE NO. 32784.01 |
| | | CHKD BY AH |

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|------------------------------------|--|
| BORING CO. New Hampshire Boring | BORING LOCATION See Exploration Location Plan |
| OPERMAN Charlie O'Donnel | GROUND SURFACE ELEV. 14 ft DATUM MLLW |
| GZA ENG. Matthew Page | DATE START 4/12/05 DATE END 4/12/05 |

| | | | | | |
|---|----------------------|------|-------|--------|--------------------|
| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF .2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 4" OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 24/14 | 0-2 | 5-11 | Medium dense, brown, fine to coarse SAND, little fine to coarse | | FILL |
| | P | | | | 11-13 | Gravel, trace (+) Silt | | |
| | P | S-2 | 24/12 | 2-4 | 9-17 | Dense, brown, fine to coarse SAND, little fine to coarse | | |
| | P | | | | 24-21 | Gravel, trace (+) Silt | 1 | |
| | | S-3 | 24/12 | 4-6 | 10-15 | Dense, brown, fine to coarse SAND, little fine to coarse | 2 | |
| | | | | | 18-29 | Gravel, trace Silt, trace Brick | | |
| | | S-4 | 24/10 | 6-8 | 10-5 | Loose, brown, fine to coarse SAND, trace (+) fine to coarse | | |
| | | | | | 4-5 | Gravel, trace Silt | | |
| | | | | | | End of Exploration at ±8' | 3 | |
| 10 | | | | | | | | |
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| <table> <tr><th>GRANULAR SOILS</th><th>COHESIVE SOILS</th></tr> <tr><th>BLOWS/FT DENSITY</th><th>BLOWS/FT DENSITY</th></tr> <tr><td>0-4</td><td><2</td></tr> <tr><td>4-10</td><td>2-4</td></tr> <tr><td>10-30</td><td>4-8</td></tr> <tr><td>10-50</td><td>8-15</td></tr> <tr><td>>50</td><td>15-30</td></tr> <tr><td></td><td>>30</td></tr> <tr><td>VERY LOOSE</td><td>VERY SOFT</td></tr> <tr><td>LOOSE</td><td>SOFT</td></tr> <tr><td>MEDIUM DENSE</td><td>M. STIFF</td></tr> <tr><td>DENSE</td><td>STIFF</td></tr> <tr><td>VERY DENSE</td><td>V. STIFF</td></tr> <tr><td></td><td>HARD</td></tr> </table> | GRANULAR SOILS | COHESIVE SOILS | BLOWS/FT DENSITY | BLOWS/FT DENSITY | 0-4 | <2 | 4-10 | 2-4 | 10-30 | 4-8 | 10-50 | 8-15 | >50 | 15-30 | | >30 | VERY LOOSE | VERY SOFT | LOOSE | SOFT | MEDIUM DENSE | M. STIFF | DENSE | STIFF | VERY DENSE | V. STIFF | | HARD | REMARKS: 1. Casing to 4' then S-3 collected. 2. Obstruction at ±5.5'. 3. Obstruction encountered. |
|---|------------------|----------------|------------------|------------------|-----|----|------|-----|-------|-----|-------|------|-----|-------|--|-----|------------|-----------|-------|------|--------------|----------|-------|-------|------------|----------|--|------|--|
| GRANULAR SOILS | COHESIVE SOILS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0-4 | <2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-10 | 2-4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10-30 | 4-8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10-50 | 8-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| >50 | 15-30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | >30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VERY LOOSE | VERY SOFT | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LOOSE | SOFT | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MEDIUM DENSE | M. STIFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DENSE | STIFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VERY DENSE | V. STIFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | HARD | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | |
|---|--|
| DRING CO. <u>New Hampshire Boring</u> DREMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Dan Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>14 ft</u> DATUM <u>MLLW</u> DATE START <u>04/12/05</u> DATE END <u>04/12/05</u> |
|---|--|

| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>5" / 4"</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05/20/05</td> <td></td> <td>11.40</td> <td>Well</td> <td>38 Days</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05/20/05 | | 11.40 | Well | 38 Days | | | | | |
|---|---|-------|--------|--------------------|--------|--------------------|----------|--|-------|------|---------|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | |
| 05/20/05 | | 11.40 | Well | 38 Days | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION | |
|-------|--------------|--------|----------|------------|----------|--|--|--|--------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | | |
| | S | | | | | 2 | | | |
| | S | | | | | | | | |
| | S | | | | | | | | |
| | S | | | | | | | | |
| | P | | | | | | | | |
| | P | | | | | | | | |
| | P | | | | | | | | |
| | P | | | | | | | | |
| 10 | 5 | S-1 | 24/8 | 8-10 | 10-12 | Medium dense, brown SILT, some fine to coarse Sand | ±8' | | |
| | 11 | | | | 8-3 | | ±10' | | |
| | 28 | S-2A | 24/24 | 10-12 | 15-16 | | S-2A: (top 12") Dense, brown, fine to coarse SAND, little (+) fine | | |
| | 24 | S-2B | | | 15-8 | | to coarse Gravel, trace Silt (Petro Odor) | ±11.5' | |
| 15 | 28 | | | | | S-2B: (bottom 12") Dense, brown SILT, trace fine to coarse Sand | 3 | | |
| | 35 | | | | | | | | |
| | 30 | S-3 | 24/8 | 14-16 | 15-15 | | | Medium dense, brown SILT, trace fine to coarse Sand, trace | |
| | 33 | | | | 12-7 | | | fine Gravel | |
| 25 | 21 | | | | | Medium dense, gray, fine to coarse SAND, little fine to coarse Gravel, trace (+) Silt | 4 | | |
| | 25 | | | | | | | | |
| | 23 | | | | | | | | |
| | 27 | S-4 | 24/10 | 19-21 | 8-6 | | | Medium dense, gray, fine to coarse SAND, little fine to coarse | |
| | 18 | | | | 5-4 | | | Gravel, trace (+) Silt | ±17.5' |
| | 18 | | | | | | | | |
| | 21 | | | | | | | | |
| | 24 | | | | | | | | |
| 25 | 17 | S-5A | 24/12 | 24-26 | 5-15 | S-5A: (top 10") Dense, gray, fine to coarse SAND, little fine to coarse Gravel, trace Silt | 5 | | |
| | 42 | S-5B | | | 35-10 | | | S-5B: (bottom 2") Dense, black/gray, fine to medium SAND, trace (+) Silt | |
| | 38 | | | | | | | | |
| | 46 | | | | | | | | |
| 30 | 41 | S-6 | 24/12 | 29-31 | 13-8 | Medium dense, black/gray, fine to medium SAND, trace Silt | 6 | | |
| | 42 | | | | 12-12 | | | | |
| | 39 | | | | | | | | |
| | 41 | | | | | | | | |
| | 40 | | | | | | | | |

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|------------------------------------|------------------------------------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 1. GZ-104A located 5' South from GZ-104. 2. Casing spun to 4', washed to 8' then pushed to 8', then S-1 taken (8-10'). 3. Casing driven to 14'. Washed to 14', then S-3 (14-16') taken. 4. Casing driven to 19', washed to 19', then S-4 (19-21') taken. 5. Casing driven to 24', washed to 24', then S-6 (24-26') taken. 6. Casing driven to 29', wash to 29', then S-6 (29-31') taken. |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| >10 MEDIUM DENSE | 4-8 M. STIFF | |
| >30 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

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|--|--------------------------|----------------------|--------------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND | PROJECT | REPORT OF BORING NO. | GZ-204A (OW) |
| | Keyspan LNG Facility | SHEET | 2 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| GEOTECH/GEOHYDROLOGICAL CONSULTANTS | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|---|----------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 53 | S-7 | 24/12 | 34-36 | 9-17 | Dense, gray/black, fine SAND, some Silt | 7 | SAND |
| | 68 | | | | 20-18 | | | |
| | 80 | | | | | | | |
| | 79 | | | | | | | |
| | 98 | | | | | | | |
| 40 | 94 | S-8 | 24/10 | 39-41 | 59-56 | Very dense, gray, fine to coarse SAND, some fine to coarse Gravel, little Silt | 8 | SAND and GRAVEL |
| | 122 | | | | 55-40 | | | |
| | 128 | | | | | | | |
| | 98 | | | | | | | |
| | 95 | | | | | | | |
| 45 | 75 | S-9 | 24/11 | 44-46 | 40-46 | Very dense, gray, fine to coarse SAND, some (+) fine to coarse Gravel, some Silt | 9 | |
| | 108 | | | | 106-78 | | | |
| | 112 | | | | | | | |
| | 118 | | | | | | | |
| | 100 | | | | | | | |
| 50 | | S-10 | 24/14 | 49-51 | 86-61 | Very dense, gray, fine to coarse SAND, some (+) fine to coarse Gravel, some Silt | 10 11 | |
| | | | | | 52-45 | | | |
| End of Exploration at ±51' | | | | | | | | |
| 5 | | | | | | | | |
| 60 | | | | | | | | |
| 75 | | | | | | | | |

| | | | | |
|--|--|---|--|---|
| GRANULAR SOILS BLOWS/FT DENSITY 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE | | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | | REMARKS: 7. Casing driven to 34', washed to 34', then S-7 (34-36') taken. 8. Casing driven to 39', washed to 39' then S-8 (39-41') taken. 9. Casing driven to 44', washed to 44' then S-9 (44-46') taken. 10. Casing driven to 49', washed to 49', then to S-10 (49-51') taken. 11. Groundwater monitoring well installed; screened from 16-4', riser from 5' to 0, guard pipe to +2.8'. Filter sand from 16-4'. Bentonite seal from 4' to 3', drill cuttings from 3' to 0'. Capped off with guard pipe and cement. |
|--|--|---|--|---|

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| | | |
|---|--|---|
| DRILLER <u>Charlie O'Donnel</u> GZA ENG. <u>Daniel E. Oaks</u> | GROUND SURFACE ELEV. <u>14</u> DATUM <u>MLLW</u> | DATE START <u>04/11/05</u> DATE END <u>04/11/05</u> |
|---|--|---|

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE: 4" **OTHER:**

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 24/6 | 0-2 | 5-6 | Medium dense, brown, fine to coarse SAND and SILT, some (-) fine to coarse Gravel | ±1' | FILL |
| | P | | | | 4-5 | | | |
| | P | S-2 | 24/14 | 2-4 | 7-11 | Medium dense, brown SILT | | |
| | P | | | | 15-12 | | | |
| | P | S-3 | 24/20 | 4-6 | 6-8 | Medium dense, brown/gray SILT | | SILT |
| | P | | | | 10-11 | | | |
| | P | S-4 | 24/20 | 6-8 | 12-12 | Medium dense, brown/gray SILT | | |
| | P | | | | 12-13 | | | |
| 10 | | S-5 | 24/18 | 9-11 | 12-14 | Medium dense, brown/gray SILT, trace fine Sand | 1 | |
| | | | | | 15-11 | | | |
| | | | | | | | | |
| | | S-6 | 24/18 | 14-16 | 13-11 | Medium dense, brown SILT | | |
| | | | | | 9-8 | | | |
| | | | | | | | | ±16.5' |
| | | S-7 | 24/14 | 19-21 | 11-11 | Medium dense, black, fine to medium SAND, little (+) Silt | | SAND |
| | | | | | 13-12 | | | |
| | | | | | | | | |
| 25 | | S-8 | 24/14 | 24-26 | 15-13 | Medium dense, gray, fine to medium SAND, trace Silt (Petroleum Odor) | | |
| | | | | | 16-18 | | | |
| | | | | | | | | ±26.5' |
| | | S-9 | 24/20 | 29-31 | 16-17 | Dense, gray/brown SILT, little (-) fine Sand | 2 | SILT |
| | | | | | 20-20 | | | |

| | | | | |
|---|--|---|--|--|
| GRANULAR SOILS BLOWS/FT DENSITY | VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY | <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Casing pushed to 9' then S-5 taken 9-11. 2. Driller reports greater drilling difficulty beginning at 32'. |
|---|--|---|--|--|

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| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. | GZ-205 |
| | Keyspan LNG Facility | SHEET | 2 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|-----------------|--------|----------|------------|----------------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | | S-10 | 24/12 | 34-36 | 23-20 21-21 | Dense, gray SILT, trace (+) fine to coarse Sand, trace (-) fine Gavel | ±37.5' | SILT |
| 0 | | S-11 | 24/14 | 39-41 | 25-30 32-30 | Very dense, brown SAND, some (-) fine to coarse Gravel, trace (+) Silt | | SAND |
| 45 | | S-12 | 24/10 | 44-46 | 25-32 20-21 | Very dense, brown, fine to coarse SAND, trace (+) Silt | | |
| 50 | | S-13 | 24/0 | 49-51 | 61-68 16-16 | NO RECOVERY | 3 | |
| | | | | | | End of Exploration at ±51' | | |
| 5 | | | | | | | | |
| 60 | | | | | | | | |
| 75 | | | | | | | | |

| | | | | |
|---|--------------|---|------------------|--|
| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: 3. 50-51', spoon drive with 300lb hammer, Impression: Pushing Cobble. |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 0-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 >30 | V. STIFF HARD | |

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| BORING CO. <u>New Hampshire Boring</u> OPERMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Dan Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>14</u> DATUM <u>MLLW</u> DATE START <u>04/13/05</u> DATE END <u>04/14/05</u> |
|---|---|

| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>5" / 4"</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>04/14/05</td> <td>10:00am</td> <td>7.3'</td> <td>14.0</td> <td>20 Minutes</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 04/14/05 | 10:00am | 7.3' | 14.0 | 20 Minutes | | | | | | | | | | |
|---|--|-------|--------|--------------------|--------|--------------------|----------|---------|------|------|------------|--|--|--|--|--|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| 04/14/05 | 10:00am | 7.3' | 14.0 | 20 Minutes | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|-----------|--|---------------------------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | S | | | | | 2 | 4" ASPHALT | |
| | S | | | | | | ±2' AGGREGATE AND COBBLES | |
| | S | S-1 | 21/6 | 2-4 | 30-45 | | SAND AND GRAVEL (FILL) | |
| | S | | | | 95-105/3" | 3 | | |
| | 147 | S-2 | 24/8 | 4-6 | 12-41 | | | |
| | 101 | | | | 47-47 | | | |
| | 106 | S-3 | 24/14 | 6-8 | 49-52 | 4 | | |
| | 89 | | | | 51-40 | 5 | | |
| | 35 | S-4 | 24/14 | 8-10 | 29-37 | | | |
| 10 | 64 | | | | 41-35 | | | |
| | 24 | S-5 | 24/12 | 10-12 | 38-32 | 6 | | |
| | 48 | | | | 34-31 | | | |
| | 45 | S-6 | 24/10 | 12-14 | 38-39 | | | |
| | 34 | | | | 33-23 | | | |
| 15 | 48 | S-7 | 24/10 | 14-16 | 15-14 | 7 | ±14' | |
| | 46 | | | | 16-22 | | SAND AND GRAVEL | |
| | 90 | S-8 | 24/14 | 16-18 | 40-100 | 8 | | |
| | 174/4" | | | | 43-30 | 9 | | |
| | Washed Ahead | | | | | | | |
| | 39 | S-9 | 24/2 | 19-21 | 35-25 | | SAND AND SILT | |
| | 59 | | | | 29-26 | | | |
| | 68 | | | | | | | |
| | 294 | | | | | | | |
| | 170 | | | | | | | |
| 25 | 80 | S-10A | 24/8 | 24-26 | 35-22 | 10 | | |
| | 95 | S-10B | | | 16-19 | | | |
| | 52 | | | | | | SILT | |
| | 81 | | | | | | | |
| | 108 | | | | | | | |
| 30 | 38 | S-11 | 24/8 | 29-31 | 22-20 | 11 | | |
| | 54 | | | | 16-19 | | | |
| | 59 | | | | | | ±32' | |
| | 68 | | | | | | | |
| | 73 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 2. Augered through 4" asphalt 8" of coarse, then 1' cobbles, then took spoon 2-4' for S-1. 3. PW5" casing spun to 4' then S-2 taken (4-6'). 4. Open hole on S-3 (6-8'). 5. 4" HW casing driven from 4' to 8'. Wash to 8' then S-4 (8-10') taken. 6. Casing driven to 10', washed to 10' then S-5 (10-12') and S-6 (12-14') taken. |
| 4-10 LOOSE | 2-4 SOFT | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 0-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |
| | | |
| | | 7. Casing driven to 14', washed to 14' then S-7 (14-16') and S-8 (16-18') taken. 8. Casing driven to 17.3' obstructed, drilled ahead to 19' 9. Casing driven to 19', washed to 19' then S-9 (19-21') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 70 | S-12 | 24/12 | 34-36 | 20-25 | Very dense, brown SILT, trace fine Sand | 12 | SILT |
| | 65 | | | | 33-33 | | | |
| | 75 | | | | | | | |
| | 60 | | | | | | | |
| | 68 | | | | | | | |
| | 58 | S-13 | 24/20 | 39-41 | 19-26 | Very dense, gray SILT | 13 | |
| | 86 | | | | 28-26 | | | |
| | 107 | | | | | | | |
| | 218/9" | | | | | | | |
| | Wash Ahead | | | | | | | |
| | 64 | S-14 | 24/20 | 44-46 | 36-63 | Very dense, brown/gray, fine to coarse SAND, some Silt, little fine to coarse Gravel | 14 | SAND |
| | 75 | | | | 85-108 | | | |
| | 76 | | | | | | | |
| | 78 | | | | | | | |
| | 65 | | | | | | | |
| 50 | S | S-15 | 24/18 | 49-51 | 24-25 | Very dense, gray SILT | 15 | SILT |
| | S | | | | 27-25 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-16 | 24/6 | 54-56 | 53-53 | Very dense, gray, fine to coarse SAND, some (+) fine to coarse Gravel, some (-) Silt | 16 | SAND |
| | S | | | | 51-47 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 60 | | S-17A | 24/16 | 59-61 | 76-74 | S-17A: (top 8") Very dense, gray, fine to coarse SAND, little (+) Silt, trace (+) fine Gravel S-17B: (bottom 8") Very dense, gray SILT, trace (-) fine Sand | 17 | SILT |
| | | S-17B | | | 72-63 | | | |
| | | | | | | | | |
| 35 | | S-18 | 17/12 | 64-66 | 92-89 | Very dense, grey, fine to coarse SAND and Silt, some fine Gravel (TILL) | 18 | TILL |
| | | | | | 118/5" | | | |
| Apparent Refusal at ±65.5' | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 10. Casing driven to 24', washed to 24', then S-10 (24-26') taken. |
| 4-10 LOOSE | 2-4 SOFT | 11. Casing driven to 29', washed to 29', then S-11 (29-31') taken. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 12. Casing driven to 34', washed to 34', then S-12 (34-36') taken. |
| 30-50 DENSE | 8-15 STIFF | 13. Casing driven to 39', washed to 39', then S-13 (39-41') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 14. Casing driven to 42'9" washed ahead to 44' then S-14 (44-46) taken. |
| | >30 HARD | 15. Casing driven to 49', washed to 49' then S-15 (49-51') taken. |
| | | 16. Mudded open hole to (washed ahead) to 54' then S-16 (54-56') taken. |
| | | 17. Telescope 3" NW indicates 4" HW casing, spin NW to 59', wash to 59' then S-17 (59-61') taken. |
| | | 18. Open hole (washed ahead) to 64' then S-18 (64-66') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| | | | |
|---|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEO TECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-207 |
| | Keyspan LNG Facility | SHEET | 1 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| | | | |
|------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| OREMAN | Charlie O'Donnel | GROUND SURFACE ELEV. | 14.5 ft |
| GZA ENG. | Daniel E. Oaks | DATUM | MLLW |
| | | DATE START | 04/26/05 |
| | | DATE END | 04/26/05 |

| | | | | | |
|---|----------------------|------|-------|--------|--------------------|
| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | GROUNDWATER READINGS | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| CASING SIZE: 4" HW OTHER: | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|----------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | 1 | SAND (FILL) | |
| | 40 | S-1 | 24/12 | 4-6 | 27-30 | | | |
| | 42 | | | | 30-38 | | | |
| | 51 | S-2 | 24/14 | 6-8 | 38-34 | 2 | SILT | |
| | 56 | | | | 43-39 | | | |
| 10 | 13 | S-3A | 24/18 | 8-10 | 10-11 | | ±9' | |
| | 18 | S-3B | | | 15-14 | | | |
| | 23 | S-4 | 24/16 | 10-12 | 14-14 | | | |
| | 28 | | | | 20-19 | | | |
| | 28 | | | | | | ±13' | |
| | 37 | | | | | | | |
| 15 | 18 | S-5 | 24/12 | 14-16 | 8-9 | 3 | SAND | |
| | 22 | | | | 13-14 | | | |
| | 31 | | | | | | | |
| | 32 | | | | | | | |
| 0 | 33 | S-6 | 24/10 | 19-21 | 7-8 | 4 | | |
| | 30 | | | | 10-11 | | | |
| | 28 | | | | | | | |
| | 30 | | | | | | | |
| 25 | 31 | S-7 | 24/10 | 24-26 | 5-8 | 5 | | |
| | 33 | | | | 12-14 | | | |
| | 42 | | | | | | | |
| | 35 | | | | | | | |
| 0 | 32 | | | | | | | |
| | 38 | S-8 | 24/11 | 29-31 | 8-7 | 6 | | |
| | 37 | | | | 9-10 | | | |
| | 30 | | | | | | | |
| | 34 | | | | | | | |
| | 36 | | | | | | | |

| <table border="1"> <tr> <th>GRANULAR SOILS</th> <th>COHESIVE SOILS</th> </tr> <tr> <td>BLOWS/FT DENSITY</td> <td>BLOWS/FT DENSITY</td> </tr> <tr> <td>0-4 VERY LOOSE</td> <td><2 VERY SOFT</td> </tr> <tr> <td>4-10 LOOSE</td> <td>2-4 SOFT</td> </tr> <tr> <td>0-30 MEDIUM DENSE</td> <td>4-8 M. STIFF</td> </tr> <tr> <td>0-50 DENSE</td> <td>8-15 STIFF</td> </tr> <tr> <td>>50 VERY DENSE</td> <td>15-30 V. STIFF</td> </tr> <tr> <td></td> <td>>30 HARD</td> </tr> </table> | GRANULAR SOILS | COHESIVE SOILS | BLOWS/FT DENSITY | BLOWS/FT DENSITY | 0-4 VERY LOOSE | <2 VERY SOFT | 4-10 LOOSE | 2-4 SOFT | 0-30 MEDIUM DENSE | 4-8 M. STIFF | 0-50 DENSE | 8-15 STIFF | >50 VERY DENSE | 15-30 V. STIFF | | >30 HARD | REMARKS: 1. Vacuum excavation from 0' - 4' 2. Casing driven to 8', cleaned to 8', through S-3 (8-10') and S-4 (10-12') taken. 3. Casing driven to 14', cleaned to 14', then S-5 (14-16') taken. 4. Casing driven to 19', cleaned to 19', then S-6 (19-21') taken. 5. Casing driven to 24', cleaned to 24', then S-7 (24-26') taken. 6. Casing driven to 29', cleaned to 29', then S-8 (29-31') taken. |
|---|------------------|----------------|------------------|------------------|----------------|--------------|------------|----------|-------------------|--------------|------------|------------|----------------|----------------|--|----------|---|
| GRANULAR SOILS | COHESIVE SOILS | | | | | | | | | | | | | | | | |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | | | | | | | | | | | | | | | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | | | | | | | | | | | | | | | | |
| 4-10 LOOSE | 2-4 SOFT | | | | | | | | | | | | | | | | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | | | | | | | | | | | | | | | | |
| 0-50 DENSE | 8-15 STIFF | | | | | | | | | | | | | | | | |
| >50 VERY DENSE | 15-30 V. STIFF | | | | | | | | | | | | | | | | |
| | >30 HARD | | | | | | | | | | | | | | | | |

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|--|--------------------------|---------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND | PROJECT | REPORT OF BORING NO | GZ-207 |
| | Keyspan LNG Facility | SHEET | 2 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| GEOTECH/GEOHYDROLOGICAL CONSULTANTS | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 66 | S-9 | 24/15 | 34-36 | 9-9 | Medium dense, brown, fine SAND and SILT (Sheen & Petroleum odor) | 7 | SAND |
| | 72 | | | | 12-13 | | | |
| | 68 | | | | | | | |
| | 68 | | | | | | | |
| | 78 | | | | | | | |
| J | 72 | S-10A | 24/12 | 39-41 | 6-6 | S-10A: (top 6") Medium dense, brown, fine SAND, some (+) Silt | 8 | ±40' |
| | 74 | S-10B | | | 9-9 | S-10B: (bottom 6") Medium dense, brown SILT, trace (-) fine Sand | | |
| | 68 | | | | | | | |
| | 85 | | | | | | | |
| 15 | 84 | S-11A | 24/8 | 44-46 | 17-16 | S-11A: (top 2") Medium dense, brown SILT, trace fine to coarse Sand | 9 | ±45' |
| | 69 | S-11B | | | 12-11 | S-11B: (bottom 6") Medium dense, brown, fine to coarse SAND, little (+) fine to coarse Gravel, little (-) Silt | | |
| | 72 | | | | | | | |
| | 70 | | | | | | | |
| 50 | | S-12 | 24/7 | 49-51 | 7-8 | Medium dense, gray, fine to coarse SAND, some (-) Silt, trace (-) fine Gravel | 10 | |
| | | | | | 7-10 | | | |
| End of Exploration at ±51' | | | | | | | | |

| | | | | |
|---|--------------|---|-----------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: 7. Casing drive to 34' cleaned to 34' then S-9 (34-36') taken. 8. Drive casing to 39', cleaned to 39' through S-10 (39-41') taken. 9. Drive casing to 44', cleaned to 44' then S-11 (44-46') taken. 10. Drive casing to 49', cleaned to 49' then S-12 (49-51') taken. |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 0-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

NOTES:
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 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-208 |
| | Keyspan LNG Facility | SHEET | 1 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY: | AH |

| | | | |
|------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| OREMAN | Charlie O'Donnel | GROUND SURFACE ELEV. | 14.5 ft |
| GZA ENG. | Daniel E. Oaks | DATE START | 04/22/05 |
| | | DATE END | 04/25/05 |

| | | | | | |
|---|----------------------|------|-------|--------|--------------------|
| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | GROUNDWATER READINGS | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| CASING SIZE: 4" HW OTHER: | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|----------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | 1 | SAND (FILL) | |
| | 9 | S-1 | 24/12 | 4-6 | 8-9 | | | |
| | 12 | | | | 9-9 | | | |
| | 12 | S-2 | 24/14 | 6-8 | 9-8 | | | |
| | 13 | | | | 6-6 | | | |
| | 4 | S-3 | 24/14 | 8-10 | 3-4 | 2 | | |
| | 9 | | | | 3-5 | | | |
| | 13 | S-4A | 24/24 | 10-12 | 9-8 | | ±11' | |
| | 20 | S-4B | | | 7-9 | | ±12' SILT | |
| | 28 | | | | | | | |
| | 34 | | | | | | | |
| 15 | 34 | S-5 | 24/14 | 14-16 | 17-19 | 3 | SAND | |
| | 38 | | | | 21-20 | | | |
| | 37 | | | | | | | |
| | 42 | | | | | | | |
| | 46 | | | | | | | |
| 0 | 37 | S-6A | 24/10 | 19-21 | 12-13 | 4 | ±20' | |
| | 34 | S-6B | | | 11-10 | | SILT | |
| | 33 | | | | | | ±22' | |
| | 41 | | | | | | | |
| | 41 | | | | | | | |
| 25 | 42 | S-7 | 24/12 | 24-26 | 7-10 | 5 | SAND | |
| | 39 | | | | 13-19 | | | |
| | 45 | | | | | | | |
| | 41 | | | | | | | |
| | 37 | | | | | | | |
| 0 | 36 | S-8 | 24/14 | 29-31 | 9-13 | 6 | | |
| | 34 | | | | 18-15 | | | |
| | 39 | | | | | | | |
| | 45 | | | | | | | |
| | 49 | | | | | | ±33.5 | |
| | | | | | | | SAND | |

| | | |
|--|---|--|
| GRANULAR SOILS BLOWS/FT DENSITY 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Vacuum excavation from 0' - 4' 2. Casing driven to 8', cleaned to 8', through S-3 (8-10') and S-4 (10-12') taken. 3. Casing driven to 14', cleaned to 14', then S-5 (14-16') taken. 4. Casing driven to 19', cleaned to 19', then S-6 (19-21') taken. 5. Casing driven to 24', cleaned to 24', then S-7 (24-26') taken. 6. Casing driven to 29', cleaned to 29', then S-8 (29-31') taken. |
|--|---|--|

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 52 | S-9 | 24/16 | 34-36 | 10-12 | Medium dense, brown/gray/red, fine SAND, trace (+) Silt | 7 | SAND |
| | 38 | | | | 16-18 | | | |
| | 51 | | | | | | | |
| | 47 | | | | | | | |
| | 54 | | | | | | | |
| 41 | 41 | S-10 | 24/14 | 39-41 | 8-9 | Medium dense, gray/brown SILT, trace (-) fine to coarse Sand | 8 | SILT |
| | 47 | | | | 14-11 | | | |
| | 59 | | | | | | | |
| | 73 | | | | | | | |
| | 62 | | | | | | | |
| 36 | 36 | S-11 | 24/6 | 44-46 | 10-11 | Medium dense, brown/gray, fine to coarse SAND, trace (+) Silt, trace fine to coarse Gravel | 9 | SAND and GRAVEL |
| | 39 | | | | 10-14 | | | |
| | 45 | | | | | | | |
| | 33 | | | | | | | |
| | 34 | | | | | | | |
| 50 | | S-12 | 24/8 | 49-51 | 11-30 | Very dense, gray, fine to coarse GRAVEL, trace (+) fine to coarse Sand, trace (+) Silt | 10 | |
| | | | | | 66-90 | | | |
| End of Exploration at ±51' | | | | | | | | |

| | | | |
|-------|---|---|---|
| | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 7. Casing driven to 34' cleaned to 34' then S-9 (34-36') taken. 8. Casing driven to 39', cleaned to 39' through S-10 (39-41') taken. 9. Casing driven to 44', cleaned to 44' then S-11 (44-46') taken. 10. Casing driven to 49', cleaned to 49' then S-12 (49-51') taken. |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

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| | |
|---|--|
| BORING CO. <u>New Hampshire Boring</u> OREMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Daniel Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>15 ft</u> DATUM <u>MLLW</u> DATE START <u>04/21/05</u> DATE END <u>04/22/05</u> |
|---|--|

| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05/20/05</td> <td></td> <td>11.62</td> <td>Well</td> <td>29 Days</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05/20/05 | | 11.62 | Well | 29 Days | | | | | |
|--|--|-------|--------|--------------------|--------|--------------------|----------|--|-------|------|---------|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | |
| 05/20/05 | | 11.62 | Well | 29 Days | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|---------------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | | | |
| | 115 | S-1 | 24/12 | 4-6 | 11-29 | Very dense, green/brown/red, fine to coarse SAND, little fine to coarse Gravel, trace (+) Silt | 1 | SAND AND GRAVEL (FILL) |
| | 69 | | | | 25-26 | | | |
| | 67 | S-2 | 24/18 | 6-8 | 42-28 | Very dense, brown/red/green, fine to coarse SAND, little fine to coarse Gravel, trace (+) Silt | 2 | |
| | 63 | | | | 24-28 | | | |
| | 14 | S-3 | 24/13 | 8-10 | 17-20 | Dense, brown, fine to coarse SAND, some fine to coarse Gravel, trace Silt | 2 | |
| | 18 | | | | 21-22 | | | |
| 10 | 18 | S-4A | 24/18 | 10-12 | 15-16 | S-4A: (top 6") Dense, brown, fine to coarse SAND, little fine to coarse Gravel, trace (+) Silt | ±11' | |
| | 32 | S-4B | | | 18-22 | | | |
| | 47 | S-5 | 24/24 | 12-14 | 34-33 | S-4B: (bottom 12") Dense, brown SILT | ±12' | SILT |
| | 32 | | | | 26-27 | | | |
| 15 | 24 | S-6A | 24/18 | 14-16 | 14-20 | S-5: Very dense, brown/gray, fine to coarse SAND, little (+) fine to coarse Gravel, trace (+) Silt (Petro Odor) | 4 | SILTY SAND |
| | 36 | S-6B | | | 18-18 | | | |
| | 45 | S-7A | 24/14 | 16-18 | 25-22 | S-6A: (top 6") Dense, brown/gray, fine to coarse SAND, little (+) fine to coarse Gravel, little (-) Silt | 4 | |
| | 44 | S-7B | | | 12-21 | | | |
| | 31 | S-8 | 24/16 | 18-20 | 16-16 | S-6B: (bottom 12") Dense, brown SILT, some (+) fine to coarse Sand, trace (-) fine Gravel | 4 | |
| 0 | 30 | | | | 37-35 | | | |
| | 30 | | | | | S-7A: (top 10") Dense, brown, fine to coarse SAND, little fine Gravel, little Silt | ±22' | |
| | 60 | | | | | | | |
| | 48 | | | | | S-7B: (bottom 4") Dense, brown SILT and fine Sand | 5 | SILT |
| 25 | 50 | S-9 | 24/18 | 24-26 | 11-13 | | | |
| | 58 | | | | 14-14 | S-8: Very dense, brown/gray, fine SAND, some (+) Silt, trace (-) fine Gravel (Boulder Chip) | ±27.5' | |
| | 83 | | | | | | | |
| | 78 | | | | | | | |
| | 61 | | | | | | | |
| 0 | 26 | S-10 | 24/16 | 29-31 | 14-16 | Dense, brown, fine to coarse SAND, little (-) Silt, trace (+) fine to coarse Gravel | 6 | SAND |
| | 40 | | | | 20-14 | | | |
| | 27 | | | | | | | |
| | 24 | | | | | | | |
| | 45 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. S-1 (4-6) and S-2 (6-8) taken (open hole) in vacuum excavation |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 8', cleaned to 8', through S-3 (8-10') and S-4 (10-12') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing driven to 14', cleaned to 14', then S-5 (14-16') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 18', cleaned to 18', then S-6 (18-20') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 24', cleaned to 24', then S-7 (24-26') taken. Silt noted in wash water at 22' |
| | >30 HARD | 6. Casing driven to 29', cleaned to 29', then S-8 (29-31') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 46 | S-11 | 24/14 | 34-36 | 9-18 | Dense, brown, fine to coarse SAND, little (+) fine to coarse Gravel, trace (+) Silt | 7 | SAND |
| | 50 | | | | 22-20 | | | |
| | 64 | | | | | | | |
| | 52 | | | | | | | |
| | 59 | | | | | | | |
| 40 | 57 | S-12 | 24/15 | 39-41 | 14-22 | Dense, brown/red, fine to coarse SAND, little (-) fine to coarse Gravel, trace (+) Silt | 8 | |
| | 73 | | | | 21-18 | | | |
| | 75 | | | | | | | |
| | 83 | | | | | | | |
| | 89 | | | | | | | |
| 45 | 66 | S-13 | 24/17 | 44-46 | 22-25 | Dense, brown/red/gray, fine to coarse SAND, some (-) fine to coarse Gravel, little (-) Silt | 9 | |
| | 58 | | | | 21-16 | | | |
| | 52 | | | | | | | |
| | 40 | | | | | | | |
| | 44 | | | | | | | |
| 50 | | S-14A | 24/12 | 49-51 | 10-13 | S-14A: (top 6") Medium dense, gray, fine to coarse SAND, some (+) Silt, little fine Gravel | 10 | ±50' |
| | | S-14B | | | 14-13 | | | |
| End of Exploration at ±51' | | | | | | | | |
| 5 | | | | | | | | |
| 60 | | | | | | | | |
| 65 | | | | | | | | |
| 70 | | | | | | | | |
| 75 | | | | | | | | |

| | | | |
|-------|---|---|-----------------|
| | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF |
| 0-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

7. Casing driven to 34' cleaned to 34' then S-9 (34-36') taken.
 8. Casing driven to 39', cleaned to 39' through S-10 (39-41') taken.
 9. Casing driven to 44', cleaned to 44' then S-11 (44-46') taken.
 10. Casing driven to 49', cleaned to 49' then S-12 (49-51') taken.
 11. Groundwater monitoring well installed; screened from 15-5', riser from 5' to 0, guard pipe to ±2.5'. Filter sand from 42-4'. Bentonite seal from 4' to 3', drill cuttings from 3' to 0'. Capped off with guard pipe and cement.

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| | |
|--|--|
| BORING CO. <u>New Hampshire Boring</u> OPERMAN <u>Charlie O'Donnell</u> GZA ENG. <u>Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>15.5 ft</u> DATUM <u>MLLW</u> DATE START <u>04/18/05</u> DATE END <u>04/21/05</u> |
|--|--|

| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>04/19/05</td> <td>0730</td> <td>7.9'</td> <td>19.0</td> <td>17 Hours</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 04/19/05 | 0730 | 7.9' | 19.0 | 17 Hours | | | | | | | | | | |
|--|---|-------|--------|--------------------|--------|--------------------|----------|------|------|------|----------|--|--|--|--|--|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| 04/19/05 | 0730 | 7.9' | 19.0 | 17 Hours | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|----------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | | SAND (FILL) | |
| | 13 | S-1 | 24/12 | 4-6 | 5-11 | Medium dense, blue/brown, fine to medium SAND, trace (+) | 1 | |
| | 10 | | | | 14-17 | Silt | | |
| | 23 | S-2 | 24/18 | 6-8 | 21-17 | Dense, blue, red, green, fine to medium SAND< trace Silt, | | |
| | 25 | | | | 17-16 | trace (-) fine Gravel | | |
| | 4 | S-3 | 24/8 | 8-10 | 11-12 | Medium dense, tan/brown, fine to coarse SAND, trace (+) | 2 | |
| | 12 | | | | 9-9 | fine Gravel, trace Silt | | |
| | 18 | S-4A | 24/18 | 10-12 | 13-13 | S-4A: (top 12") Medium dense, black/brown, fine to coarse SAND, | | |
| | 30 | S-4B | | | 12-12 | trace (+) fine to coarse Gravel, trace Silt (Petro Odor) | | |
| | 32 | S-5A | 24/16 | 12-14 | 20-19 | S-4B: (bottom 6") Medium dense, brown SILT, trace (-) fine Sand | | |
| | 29 | S-5B | | | 23-25 | S-5A: (top 13") Medium dense, brown/black, fine to coarse SAND, | | ±14' |
| | 19 | S-6 | 24/16 | 14-16 | 9-15 | trace fine Gravel, trace Silt (Petro Odor) | 3 | |
| | 29 | | | | 17-19 | S-5B: (bottom 3") Medium dense, brown SILT, trace fine Sand | | |
| | 29 | S-7 | 24/14 | 16-18 | 14-11 | S-6: Dense, black/brown SILT, some fine to coarse Gravel, | | SILT |
| | 32 | | | | 12-12 | trace fine Sand | | |
| | 33 | | | | | S-7: Medium dense, brown SILT | | |
| | 35 | S-8A | 24/18 | 19-21 | 12-18 | S-8A: (top 9") Medium dense, brown SILT | 4 | ±20' |
| | 29 | S-8B | | | 11-12 | S-8B: (bottom 9") Medium dense, brown, fine to coarse SAND, | | |
| | 37 | | | | | trace (+) Silt | | |
| | 43 | | | | | | | |
| | 39 | | | | | | | SAND |
| | 23 | S-9 | 24/12 | 24-26 | 7-12 | Medium dense, brown, fine to coarse SAND, little (-) Silt, trace | 5 | |
| | 25 | | | | 13-13 | (-) fine Gravel | | |
| | 24 | | | | | | | |
| | 23 | | | | | | | |
| | 49 | | | | | | | |
| | 26 | S-10 | 24/14 | 29-31 | 10-9 | Medium dense, brown, fine to coarse SAND, little (-) Silt, trace | 6 | |
| | 26 | | | | 11-10 | (-) fine Gravel | | |
| | 21 | | | | | | | |
| | 24 | | | | | | | ±32.5' |
| | 25 | | | | | | | SILT |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. S-1 (4-6) and S-2 (6-8) taken (open hole) in vacuum excavation |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 8', cleaned to 8', through S-3 (8-10') and S-4 (10-12') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing driven to 14', cleaned to 14', then S-5 (14-16') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 19', cleaned to 19', then S-6 (19-21') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 24', cleaned to 24', then S-7 (24-26') taken. Silt noted in wash water at 22' |
| | >30 HARD | 6. Casing driven to 29', cleaned to 29', then S-8 (29-31') taken. |

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 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 44 | S-11 | 24/12 | 34-36 | 10-10 | Medium dense, brown/red SILT, trace (-) fine Sand | 7 | SILT |
| | 45 | | | | 14-17 | | | |
| | 54 | | | | | | | |
| | 52 | | | | | | | |
| | 59 | | | | | | | |
| 0 | 56 | S-12 | 24/12 | 39-41 | 9-11 | Medium dense, brown SILT, trace (+) fine to coarse Sand | 8 | SILT |
| | 63 | | | | 16-14 | | | |
| | 72 | | | | | | | |
| | 83 | | | | | | | |
| | 64 | | | | | | ±42.5' | |
| 5 | 55 | S-13 | 24/10 | 44-46 | 10-9 | Medium dense, brown/gray, fine to coarse SAND, little (-) | 9 | SAND |
| | 48 | | | | 10-11 | Silt, trace (+) fine Gravel | | |
| | 51 | | | | | | | |
| | 40 | | | | | | | |
| | 31 | | | | | | | |
| 50 | 29 | S-14A | 24/12 | 49-51 | 8-10 | S-14A: (top 10") Medium dense, gray, fine to coarse SAND, | 10 | SILT |
| | 30 | S-14B | | | 9-6 | little (-) Silt, trace (+) fine Gravel | | |
| | 59 | | | | | S-14B: (bottom 2") Medium dense, gray SILT | | |
| | 47 | | | | | | | |
| | 66 | | | | | | ±50.8' | |
| 5 | 67 | S-15A | 24/16 | 54-56 | 8-7 | S-15A: (top 4) Medium dense, gray SILT | 11 | SAND |
| | 58 | S-15B | | | 7-5 | S-15B: (bottom 12") Medium dense, gray, fine to coarse SAND, | | |
| | 44 | | | | | little fine Gravel, trace (+) Silt | | |
| | 45 | | | | | | | |
| | 69 | | | | | | ±54.3' | |
| 60 | 71 | S-16 | 24/12 | 59-61 | 8-5 | Loose, gray SILT | 12 | SILT |
| | 67 | | | | 4-6 | | | |
| | 73 | | | | | | | |
| | 57 | | | | | | | |
| | 54 | | | | | | | |
| 65 | S | S-17 | 24/14 | 64-66 | 8-6 | Medium dense, gray SILT, some (-) fine Sand | 13 | SILT |
| | S | | | | 8-11 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | ±68' | |
| 0 | S | S-18 | 24/14 | 69-71 | 28-27 | Very dense, gray, fine to coarse SAND, some fine to coarse | 14 | SAND AND GRAVEL |
| | S | | | | 27-22 | Gravel, trace (-) Silt | 15 | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 75 | S | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: | |
|------------------------------------|------------------------------------|--|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | 7. Casing driven to 34' cleaned to 34' then S-11 (34-36') taken. | 14. Casing driven to 69', cleaned to 69' then S-18 (69-71') taken. |
| 4-10 LOOSE | 2-4 SOFT | 8. Casing driven to 39', cleaned to 39' then S-12 (39-41') taken. | 15 Washed ahead to 74' |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 9. Casing driven to 44', cleaned to 44' then S-13 (44-46') taken. | |
| 0-50 DENSE | 8-15 STIFF | 10. Casing driven to 49', cleaned 49' then S-14 (49-51') taken. | |
| >50 VERY DENSE | 15-30 V. STIFF | 11. Casing driven to 54', cleaned to 54' then S-15 (54-56') taken. | |
| | >30 HARD | 12. Casing driven to 59', cleaned to 59' then S-16 (59-61') taken. | |
| | | 13. Casing driven to 64', cleaned to 64' then S-17 (64-66') taken. | |

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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | S | S-19 | 24/18 | 74-76 | 35-48 | Very dense, gray, fine to coarse SAND, little (+) fine Gravel, little (-) Silt | 16 | SAND AND GRAVEL |
| | S | | | | 51-39 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 85 | S | S-20 | 24/16 | 79-81 | 24-30 | Very dense, gray SILT | 17 | SILT |
| | S | | | | 34-39 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 95 | S | S-21 | 24/12 | 84-86 | 17-18 | Dense, gray, fine SAND, some Silt | 18 | SAND |
| | S | | | | 29-31 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-22 | 24/16 | 89-91 | 30-36 | Very dense, gray, fine SAND, some (+) Silt | 19 | SAND |
| | S | | | | 46-31 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 100 | S | S-23 | 24/18 | 94-96 | 43-48 | Very dense, gray, fine SAND, little (+) Silt | 20 | SAND |
| | S | | | | 57-53 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 105 | S | S-24 | 24/20 | 99-101 | 28-36 | Very dense, gray, fine to medium SAND, little (-) Silt | 21 | SAND |
| | S | | | | 38-33 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 110 | S | S-25 | 24/19 | 104-106 | 43-50 | Very dense, grey, fine to medium SAND, trace (+) Silt | 22 | SAND |
| | S | | | | 47-41 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 115 | S | S-26 | 24/15 | 109-111 | 29-31 | Very dense, gray, fine to medium SAND, trace (+) SILT | 23 | SAND |
| | S | | | | 38-47 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |

| | | |
|-------------------------|-------------------------|--|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 16. Begin telescoping 3" NW casing in side 4" HW, lower to 74', then take S-19 (74-76) 17. Wash ahead to 79', spin 3"NW to 79" and take S-20 (79-81) 18. Wash ahead to 84', spin 3"NW to 84" and take S-21 (84-86) 19. Wash ahead to 89', spin 3"NW to 89" and take S-22 (89-91) 20. Wash ahead to 94', spin 3"NW to 94" and take S-23 (94-96) 21. Wash ahead to 99', spin 3"NW to 99" and take S-24 (99-101) 22. Wash ahead to 104', spin 3"NW to 104" and take S-25 (104-106) 23. Wash ahead to 109', spin 3"NW to 109" and take S-26 (109-111) 24. Wash ahead to 114', spin 3"NW to 114" and take S-27 (114-116) 25. Wash ahead to 119', spin 3"NW to 119" and take S-26 (119-121) |
| 4-10 LOOSE | 2-4 SOFT | |
| 1-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 1-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

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GZA GEOENVIRONMENTAL INC.
 40 BROADWAY, PROVIDENCE, RHODE ISLAND
 GEOTECH/GEOHYDROLOGICAL CONSULTANTS

PROJECT
 Keyspan LNG Facility
 Providence, Rhode Island

REPORT OF BORING NO. GZ-210
 SHEET 4 of 4
 FILE NO. 32784.01
 CHKD BY AH

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 115 | S | S-27 | 24/14 | 114-116 | 28-45 | Very dense, gray, fine to medium SAND, trace (+) Silt | 24 | SAND |
| | S | | | | 66-70 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 20 | | S-28 | 24/16 | 119-121 | 33-53 | Very dense, gray, fine to medium SAND, trace (+) Silt | 25 | |
| | | | | | 68-55 | | | |
| 25 | | | | | | | | |
| | | | | | | | | |
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| 130 | | | | | | | | |
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| 155 | | | | | | | | |

| GRANULAR SOILS | | COHESIVE SOILS | |
|------------------|--------------|------------------|-----------|
| BLOWS/FT DENSITY | | BLOWS/FT DENSITY | |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

REMARKS:
 24. Wash ahead to 114', spin 3"NW to 114" and take S-27 (114-116)
 25. Wash ahead to 119', spin 3"NW to 119" and take S-26 (119-121)

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 10 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-211 |
| | Keyspan LNG Facility | SHEET | 1 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| | | | |
|-------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| PREPARED BY | Charlie O'Donnel | GROUND SURFACE ELEV. | 10 ft |
| ENGINEER | Daniel Oaks | DATUM | MLLW |
| | | DATE START | 05-02-05 |
| | | DATE END | 05-03-05 |

| | | | | | |
|--|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 4" HW OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | 5/3/05 | 0700 | 1.8' | 18' | 16 Hours |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 24/10 | 0-2 | 3-6 | Medium dense, brown fine to coarse SAND, some fine to | | |
| | 66 | | | | 19-23 | coarse Gravel, trace Silt | | |
| | 73 | S-2 | 24/8 | 2-4 | 11-12 | Medium dense, brown fine to coarse SAND, little Silt | | SAND |
| | 20 | | | | 17-22 | little fine Gravel | | (FILL) |
| | 10 | S-3 | 24/0 | 4-6 | 29-16 | NO RECOVERY | 1 | |
| | 10 | | | | 8-4 | | | |
| | 9 | S-4 | 24/10 | 6-8 | 3-2 | Loose, brown, fine to coarse SAND, little fine Gravel, little Silt | | |
| | 10 | | | | 3-4 | | | |
| | 9 | S-5A | 24/16 | 8-10 | 11-4 | S-5A: (top 4") Loose, gray/brown, fine to coarse SAND, some Silt, | 2 | ±9' |
| | 16 | S-5B | | | 4-3 | trace fine Gravel | | |
| | 4 | UP-1 | 6/0 | 10-10.6 | PUSH | S-5B: (bottom 12") Loose, gray/black, FIBROUS PEAT | 3 | FIBROUS PEAT |
| | 4 | S-6 | 18/0 | 10.6-12 | 45-39-29 | UP-1: Shelby Tube sampling, NO RECOVERY | | ±12' |
| | 36 | S-7 | 24/8 | 12-14 | 12-12 | S-6: NO RECOVERY | | |
| | 65 | | | | 16-15 | S-7: Medium dense, gray, fine to coarse Sand, trace (+) Silt | | SAND |
| | 9 | S-8A | 24/14 | 14-16 | 22-11 | (top 7") Medium dense, gray, fine to medium SAND, little (+) Silt | 4 | ±14.5' |
| | 6 | S-8B | | | 7-4 | (bottom 7") Medium dense, gray, organic SILT, little fine Sand | | |
| | 12 | UP-2 | 24/0 | 16-18 | Push | UP-2: Shelby Tube sampling, NO RECOVERY | 5 | ORGANIC |
| | 9 | S-9 | 24/10 | 16-18 | N/A | Gray, organic SILT, little fine Sand, trace fine Gravel | | SILT |
| | 14 | UP-3 | 24/0 | 18-20 | Push | UP-3: Shelby Tube sampling, NO RECOVERY | 6 | |
| | 14 | S-10 | 24/4 | 18-20 | N/A | Gray, organic SILT, little fine Sand, trace fine Gravel | | |
| | 16 | S-11 | 24/18 | 20-22 | 4-2 | Medium stiff, gray, organic SILT, trace fine Sand, trace fine Gravel, | 7 | |
| | 15 | | | | 2-2 | trace Shells | | |
| | 15 | S-12 | 24/24 | 22-24 | 4-3 | Medium stiff, gray, organic SILT, trace fine Sand, trace fine Gravel, | 8 | |
| | 14 | | | | 3-3 | trace Shells | | |
| | 25 | UP-4 | 24/0 | 24-26 | Push | UP-4: Shelby Tube sampling, NO RECOVERY | | |
| | 18 | S-13 | 24/12 | 24-26 | N/A | Gray, organic SILT, trace Twig, trace fine Sand | 9 | |
| | 19 | S-14 | 24/14 | 26-28 | 4-3 | Medium stiff, gray, organic SILT, trace Fibrous Peat, trace fine Gravel, | | ±28' |
| | 27 | | | | 5-7 | trace fine Sand | | |
| | 69 | S-15 | 24/12 | 28-30 | 12-19 | Dense, gray, fine to medium SAND, some fine to coarse Gravel, | 10 | SAND |
| | 57 | | | | 24-24 | little (+) Silt | | |
| | 47 | S-16 | 24/10 | 30-32 | 16-11 | Medium dense, gray, fine to coarse SAND, some (-) fine to | 11 | |
| | 39 | | | | 13-11 | coarse Gravel, trace (+) Silt | | |
| | 36 | | | | | | | |
| | 38 | | | | | | | |

| | | |
|--|---|--|
| GRANULAR SOILS BLOWS/FT DENSITY 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Casing driven to 4'. Cleaned to 4', then S-3 (4-6') and S-4 (6-8) taken. 2. Casing driven to 8'. Cleaned to 8', then S-5 (8-10') taken. 3. Casing driven to 10'. Cleaned to 10', then UP-1 (10-12') and S-6 taken. 4. Casing driven to 14'. Cleaned to 14', then S-8 (14-16') taken. 5. Casing driven to 16'. Cleaned to 16', then UP-2 and S-9 taken (16-18') and S-9 taken. 6. Casing driven to 18'. Cleaned to 18', then UP-3 the S-10 taken. 7. Casing driven to 20'. Cleaned to 20', then S-11 (20-22') taken. 8. Casing driven to 22'. Cleaned to 22' then S-12 (22-24') taken. |
|--|---|--|

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|---------|------------|----------|---|--------|------------------------|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 34 | S-17 | 24/8 | 34-36 | 13-15 | Dense, gray, fine to coarse SAND, little (+) fine to coarse | 12 | SAND |
| | 37 | | | | 16-15 | Gravel, trace (+) Silt | | |
| | 40 | | | | | | | |
| | 35 | | | | | | | |
| | 35 | | | | | | | |
| 0 | 24 | S-18 | 24/7 | 39-41 | 10-15 | Medium dense, gray/brown, fine to coarse SAND, little (-) | 13 | |
| | 32 | | | | 14-22 | fine Gravel, trace Silt | | |
| | 42 | | | | | | | |
| | 48 | | | | | | | |
| | 56 | | | | | | | |
| 5 | 24 | S-19 | 24/13 | 44-46 | 8-10 | Medium dense, gray, fine to coarse SAND, trace (+) Silt | 14 | |
| | 18 | | | | 10-11 | | | |
| | 23 | | | | | | | |
| | 35 | | | | | | | |
| | 49 | | | | | | | |
| 50 | | S-20 | 24/ | 49-51 | 16-21 | Dense, brown SILT | 15 | SILT |
| | | | | | 27-17 | | | |
| End of Exploration at ±51' | | | | | | | | |
| 5 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 60 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 65 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 0 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 75 | | | | | | 8. Casing driven to 22', cleanout to 22', then S-12 (22-24') taken. | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 9. Casing driven to 24', cleaned to 24', then UP-4 (24-26') taken. |
| 4-10 LOOSE | 2-4 SOFT | 10. Casing driven to 28', cleaned to 28' then S-15 (28-30') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 11. Casing driven to 30', cleaned to 30', then S-16 (30-32') taken. |
| 10-50 DENSE | 8-15 STIFF | 12. Casing drive to 34', cleaned to 34' then S-17 (34-36') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 13. Drive casing to 39', cleaned to 39', then S-18 (39-41') taken. |
| | >30 HARD | 14. Drive casing to 44', cleaned to 44' then S-19 (44-46') taken. |
| | | 15. Drive casing to 49', cleaned out 49' then S-20 (49-51') taken. |

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| | |
|--|--|
| DRING CO. <u>New Hampshire Boring</u> OPERMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Joanne Kissinger</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>11 ft</u> DATUM <u>MLLW</u> DATE START <u>05/04/05</u> DATE END <u>05/05/05</u> |
|--|--|

AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE: 5" / 4" / 3" OTHER:

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|-------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 12/6" | 0-1 | 7-120/6" | Very Dense, light brown, fine to medium SAND, trace Silt | 1 | ±1' FILL |
| | 5 | | | | | | | |
| | WOC | C-1 | 24/8 | 2-4 | 9 min/ft | CORED THROUGH CONCRETE | 2 | ±3' CONCRETE |
| | WOC | | | | 1 min/ft | | | |
| | 2 | S-2 | 24/4 | 4-6 | 1-1 | Very loose, light brown, fine to medium SAND, trace Silt | 3 | |
| | 4 | | | | 1-2 | | | |
| | 5 | S-3 | 24/5 | 6-8 | 2-1 | Very loose, gray (oil-type stain), fine to medium SAND, trace Silt | 4 | FILL |
| | 4 | | | | 1-2 | | | |
| 10 | 14 | S-4 | 24/1 | 8-10 | 8-6 | Loose, gray (oil-type stain), fine GRAVEL, some fine to medium Sand, trace Silt | 5 | |
| | 17 | | | | 1-2 | | | |
| | 11 | S-5 | 24/5 | 10-12 | 11-4 | Loose, gray (oil-type stain), fine to medium SAND, little Silt, trace Wood Chips | 6 | |
| | 27 | | | | 3-5 | | | |
| | 17 | S-6 | 24/12 | 12-14 | 10-9 | Medium dense, gray (oil-type stain), fine to medium SAND, little fine Gravel, little Silt | 7 | |
| | 19 | | | | 17-10 | | | |
| 15 | 11 | S-7 | 24/8 | 14-16 | 2-1 | Medium dense, gray, fine to coarse SAND, little Silt | 8 | |
| | 21 | | | | 9-16 | | | |
| | 35 | S-8 | 24/10 | 16-18 | 15-32 | Dense, gray, fine to coarse SAND, little Silt, trace fine Gravel | 9 | |
| | 29 | | | | 12-8 | | | |
| 20 | 15 | S-9 | 24/8 | 18-20 | 8-8 | Medium dense, gray, fine to coarse SAND, little Silt, trace fine Gravel, trace Organics in tip of Spoon | 10 | |
| | 16 | | | | 6-3 | | | ±20' |
| | 12 | S-10A | 24/13 | 20-22 | 2-3 | S-10A: (Top 8"): Loose, grayish-brown, fine to medium SAND, trace Organics, trace Silt | 11 | SAND |
| | 12 | S-10B | | | 3-7 | | | ±21.5' (TRACE ORGANICS) |
| | 13 | S-11 | 24/12 | 22-24 | 7-5 | S-10B: (Bottom 5"): Loose, grayish-brown, fine to medium SAND, trace Silt | 12 | |
| | 15 | | | | 7-5 | | | |
| 25 | 23 | S-12 | 24/9 | 24-26 | 6-6 | S-11: Medium dense, grayish-brown, fine to medium SAND, trace Silt | 13 | SAND |
| | 43 | | | | 7-7 | | | |
| | 36 | | | | | S-12: Medium dense, brown, fine to coarse SAND, trace fine Gravel, trace Silt | | |
| | 35 | | | | | | | |
| | 43 | | | | | | | |
| 30 | 46 | S-13 | 24/12 | 29-31 | 14-12 | Medium dense, brown, fine to coarse SAND, little fine Gravel, little Silt | | |
| | 40 | | | | 12-12 | | | |
| | 52 | | | | | | | |
| | 65 | | | | | | | |
| | 46 | | | | | | | ±34.2' |
| | 39 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | 2. Obstruction encountered possible concrete foundation or boulder. Sample S-1 collected then casing installed to ±17' and washed out. Rollerbit to ±2' then core C-1. Cored 2-4', broke through obstruction at ±3'. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Rollerbit to 4', installed casing to 4'. Collect samples S-2 and S-3. Installed casing to 8' and washed out. |
| 0-50 DENSE | 8-15 STIFF | 4. Petro odor sample S-3. 7. Petro odor (S-5) installed casing to 12' & wash-out. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Spoon bouncing, possible piece of wood. Oil type odor S-4. 8. Petro odor (S-6) installed casing to 14' & wash-out. |
| | >30 HARD | 6. Casing installed to 10' and washed out. 9. Installed casing to 18' & wash-out. |

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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 39 | S-14 | 24/7 | 34-36 | 14-14 | (Top 2"): Dense, gray, fine to coarse SAND, little Silt | 14 | SAND |
| | 33 | | | | 18-14 | (Bottom 5"): Dense, brown, fine to medium SAND, | | |
| | 51 | | | | | some Silt, trace fine Gravel | | |
| | 60 | | | | | | | |
| | 47 | | | | | | | |
| 40 | 48 | S-15 | 24/12 | 39-41 | 20-23 | Very dense, grayish-brown, fine to coarse (-) SAND, some Silt | 15 | |
| | 87 | | | | 36-22 | | | |
| | 69 | | | | | | | |
| | 62 | | | | | | | |
| | 62 | | | | | | | |
| 45 | 35 | S-16 | 24/12 | 44-46 | 12-8 | (Top 6"): Medium dense, grayish-brown, fine to coarse (-) SAND, | 16 | |
| | 44 | | | | 10-12 | some Silt | | |
| | 31 | | | | | (Bottom 6"): Medium dense, grayish-brown, fine to medium SAND, | | |
| | 79 | | | | | trace Silt | | |
| | 58 | | | | | | | |
| 50 | | S-17 | 24/7 | 49-51 | 8-8 | Medium dense, grayish-brown, fine to medium SAND, trace | 17 | |
| | | | | | 19-18 | Silt (1" Layer of gray, fine to medium Sand, some Silt) | | |
| | | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 55 | S | S-18 | 24/12 | 54-56 | 42-21 | Very dense, grayish-brown, fine to coarse SAND, some Silt, | 18 | |
| | S | | | | 40-30 | trace fine Gravel (2" Layer of grayish-brown, fine to medium | | |
| | S | | | | | Sand, trace Silt) | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 60 | S | S-19 | 24/10 | 59-61 | 19-15 | (Top 4"): Medium dense, grayish-brown, fine to coarse SAND, | 19 | SAND |
| | S | | | | 9-13 | little Silt, trace fine Gravel | | |
| | S | | | | | (Bottom 6"): Medium dense, grayish-brown, fine to medium SAND, | | |
| | S | | | | | trace Silt | | |
| | S | | | | | | | |
| 65 | S | S-20 | 24/12 | 64-66 | 22-18 | Dense, brownish-gray, fine to medium SAND, little fine Gravel, | 20 | |
| | S | | | | 13-19 | little Silt | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 70 | S | S-21 | 24/12 | 69-71 | 34-35 | Very dense, brownish-gray, fine to medium SAND, trace Silt | 21 | |
| | S | | | | 57-42 | (1" Layers of fine to coarse (-) Sand, little fine Gravel, little | | |
| | S | | | | | Silt) | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 75 | S | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 10. Took sample S-9, installed casing to 20' & wash-out. |
| 4-10 LOOSE | 2-4 SOFT | 11. Took sample S-11, installed casing to 24'. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 12. Washed to 24', collected Sample S-12 (Bag Sample) |
| 0-50 DENSE | 8-15 STIFF | 13. Installed casing to 29' & washed out, collected sample S-13 (Bag Sample) |
| >50 VERY DENSE | 15-30 V. STIFF | 14. Installed casing to 34' & washed out, collected sample S-14 (No Bag Sample) |
| | >30 HARD | 15. Installed casing to 39' & wash-out. Collected sample S-15 (Bag Sample) |
| | | 16. Installed casing to 44' & washed out. Collected sample S-16 (No Bag Sample) |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| | | | |
|---|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. | GZ-212 |
| | Keyspan LNG Facility | SHEET | 3 of 3 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | S | S-22 | 24/8 | 74-76 | 27-28 | Very dense, dark gray, fine to coarse SAND, little Silt, trace fine Gravel | 23 | |
| | S | | | | 33-27 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 80 | S | S-23 | 24/12 | 79-81 | 37-51 | Very dense, dark gray, fine to coarse SAND< some fine Gravel, little Silt | 24 | |
| | S | | | | 38-40 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 85 | S | S-24 | 24/7 | 84-86 | 30-31 | Very dense, dark gray, fine to coarse SAND, some fine Gravel, little Silt | 25 | |
| | S | | | | 28-24 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-25 | 24/4 | 89-91 | 39-27 | Very dense, dark gray, fine to coarse SAND, some fine Gravel, little Silt | 26 | |
| | S | | | | 31-42 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 95 | S | S-26 | 24/6 | 94-96 | 22-24 | Very dense, brownish-gray, fine to medium SAND, trace fine Gravel, trace Silt | 27 | SAND |
| | S | | | | 35-27 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 100 | S | S-27 | 24/8 | 99-101 | 31-43 | Very dense, gray, fine to coarse SAND, some Silt, little fine Gravel. | 28 | GLACIAL TILL |
| | S | | | | 44-37 | | | |
| End of Exploration at ±101' | | | | | | | | |
| 105 | | | | | | 17. Casing installed to 49' & washed out. Collect sample S-17 (No Bag Sample) | | |
| | | | | | | 18. Open hole with mud to S-3 (Bag Sample) due to sands. Gravel encountered, 3" casing spun to 54', Collect Sample S-18 (Bag Sample) | | |
| | | | | | | 19. Rollerbit to 59', possible cobbles encountered, spin casing to 59' & washed out. Collect Sample S-19 (No Bag Sample). | | |
| | | | | | | 20. Rollerbit ahead to 64', spin casing to 64' & washed out. Rig shaking and grinding, possible cobbles encountered. Collected Sample S-20. (Bag Sample) | | |
| | | | | | | 21. Rollerbit ahead to 69'. Spin casing to 69'. | | |
| 115 | | | | | | 22. Washed out & collected sample S-214 (Bag Sample). | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
|------------------------------------|--------------|------------------------------------|-----------|---|
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | 24. Rollerbit ahead to 79', installed casing to 79' and washed out. Collected sample S-23, rollerbit grinding and rig shaking. |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | 25. Rollerbit ahead to 84'. Rollerbit grinding, rig shaking, installed casing to 84' of wash-out. Collected sample S-24 2' blow-out into casing when spoon pulled out |
| 0-50 | DENSE | 8-15 | STIFF | 26. Rollerbit ahead to 89'. Installed casing to 89' & washed out. Collected sample S-25 (No Bag Sample). |
| >50 | VERY DENSE | 15-30 | V. STIFF | 27. Rollerbit ahead to 94', installed casing to 94' & washed out. Collected sample S-26 (No Bag Sample). |
| | | >30 | HARD | 28. Rollerbit ahead to 99'. Rollerbit grinding. Installed casing to 99' & washed out. Collected sample S-27 (Bag Sample). |

OTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|--|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEO/TECH/GEOHYDROLOGICAL CONSULTANTS GEO TECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-213 |
| | Keyspan LNG Facility | SHEET | 1 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| | | | |
|------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| BOREMAN | Charlie O'Donnel | GROUND SURFACE ELEV. | 12 ft |
| GZA ENG. | Daniel E. Oaks | DATUM | MLLW |
| | | DATE START | 04-28-05 |
| | | DATE END | 04-29-05 |

| | | | | | |
|--|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF .2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | GROUNDWATER READINGS | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| CASING SIZE: 4" HW OTHER: | 04-29-05 | 0730 | 4.31 | 49' | 17 Hours |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 24/12 | 0-2 | 3-5 | Medium dense, brown, fine to coarse SAND, little fine to coarse | | |
| | P | | | | 9-11 | Gravel, trace (+) Silt | | |
| | 20 | S-2 | 24/14 | 2-4 | 10-13 | Dense, brown, fine to coarse SAND, little (+) fine to coarse | | |
| | 24 | | | | 21-19 | Gravel, trace (+) Silt | | |
| | 24 | S-3 | 24/6 | 4-6 | 15-11 | Medium dense, brown, fine to coarse SAND, little (+) fine to | 1 | SAND (FILL) |
| | 33 | | | | 11-14 | coarse Gravel, trace (+) Silt | | |
| | 27 | S-4 | 24/20 | 6-8 | 15-20 | Dense, brown, fine to coarse SAND, little fine to coarse Gravel, | | |
| | 26 | | | | 21-27 | trace (+) Silt | | |
| | 32 | S-5 | 24/10 | 8-10 | 20-16 | Dense, brown, fine to coarse SAND, little (+) fine to coarse | 2 | |
| 10 | 45 | | | | 15-19 | Gravel, trace (+) Silt | | |
| | 24 | S-6 | 24/12 | 10-12 | 16-11 | Medium dense, brown, fine to coarse SAND, little (+) fine to coarse | 3 | |
| | 24 | | | | 17-22 | Gravel, trace (+) Silt | | |
| | 22 | S-7 | 24/14 | 12-14 | 12-14 | Medium dense, gray/brown, fine to coarse SAND, little (+) fine | | |
| | 30 | | | | 12-15 | to coarse Gravel, trace Silt (Slightly Petro Odor) | | |
| 15 | 26 | S-8 | 24/10 | 14-16 | 11-15 | Dense, gray/brown, fine to coarse SAND, some (-) fine to coarse | 4 | |
| | 53 | | | | 20-19 | Gravel, trace (-) Silt (Petro Odor) | | |
| | 65 | S-9 | 24/18 | 16-18 | 28-27 | Dense, brown, fine to coarse SAND, some (-) fine to coarse | | |
| | 60 | | | | 21-24 | Gravel, trace (+) Silt | | |
| 0 | 30 | S-10 | 24/10 | 18-20 | 13-17 | Dense, gray, fine to coarse SAND, little (+) fine to coarse | 5 | |
| | 34 | | | | 22-19 | Gravel, trace (+) Silt | | |
| | 40 | S-11 | 24/16 | 20-22 | 20-18 | Dense, brown, fine to coarse SAND, little (+) fine to coarse | | |
| | 48 | | | | 20-20 | Gravel, trace (-) Silt | | |
| | 64 | S-12 | 24/14 | 22-24 | 21-29 | Very dense, brown, fine to coarse SAND, some (-) fine to coarse | 6 | |
| | 58 | | | | 27-28 | Gravel, little (-) Silt | | |
| 25 | 20 | S-13 | 24/14 | 24-26 | 12-12 | Medium dense, brown, fine to medium SAND, trace Silt, trace (-) | 7 | |
| | 33 | | | | 12-15 | fine Gravel | | |
| | 67 | | | | | | | |
| | 61 | | | | | | | |
| | 59 | | | | | | | |
| 30 | 61 | S-14 | 24/12 | 29-31 | 7-5 | Medium dense, brown/gray, fine to coarse SAND, trace (-) Silt | 8 | |
| | 64 | | | | 5-6 | | | |
| | 64 | | | | | | | |
| | 58 | | | | | | | |
| | 55 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Casing pushed to 2' and driven to 4', cleared to 4' then S-3 (4-6') and S-4 (6-8') taken. |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 8', cleaned to 8' then S-5 (8-10') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing drive to 10', cleaned to 10' then S-6 (10-12') and S-7 (12-14') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 14', cleaned 14', then S-8 (14-16') and S-9 (16-18') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 18', cleaned to 18' then S-10 (18-20') and S-11 (20-22') taken. |
| | >30 HARD | 6. Casing driven to 22', cleaned to 22', then S-12 (22-24') taken. |
| | | 7. Casing driven to 24', cleaned to to 24' then S-13 (24-26') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 35 | S-15 | 24/12 | 34-36 | 4-4 | Loose, brown, fine to medium SAND, trace (-) Silt | 9 | SAND |
| | 31 | | | | 5-7 | | | |
| | 39 | | | | | | | |
| | 53 | | | | | | | |
| | 63 | | | | | | | |
| 0 | 57 | S-16 | 24/7 | 39-41 | 11-7 | S-16A: (top 5") Medium dense, brown/red, fine to coarse SAND, some (+) fine to coarse Gravel, trace Silt | 10 | ±40' |
| | 59 | S-16B | | | 10-8 | | | |
| | 62 | | | | | | | |
| | 71 | | | | | | | |
| | 69 | | | | | S-16B: (bottom 2") Medium dense, tan/brown SILT, little (-) fine to coarse Sand | ±42.5' | SILT |
| 5 | 56 | S-17 | 24/12 | 44-46 | 15-13 | | | |
| | 55 | | | | 10-11 | Medium dense, brown, fine to coarse SAND, little (+) fine to coarse Gravel, trace (+) Silt | 11 | SAND |
| | 68 | | | | | | | |
| | 114 | | | | | | | |
| | 113 | | | | | | | |
| 50 | | S-18 | 24/4 | 49-51 | 15-24 | Dense, brown, fine to coarse SAND, some (+) fine to coarse Gravel, little (+) Silt | 12 | |
| | | | | | 26-17 | | | |
| End of Exploration at ±51' | | | | | | | | |
| 5 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 60 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 65 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 0 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 75 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
|------------------------------------|--------------|------------------------------------|-----------|--|
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | 9. Drive casing to 34', cleaned to 34' then S-15 (34-36') taken. |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | 10. Drive casing to 39', cleaned to 39', then S-16 (39-41') taken. |
| 0-50 | DENSE | 8-15 | STIFF | 11. Drive casing to 44'. Cleaned to 44' then S-17 (44-46') taken. |
| >50 | VERY DENSE | 15-30 | V. STIFF | 12. Drive casing to 49', cleaned to 49' then S-18 (49-51') taken. |
| | | >30 | HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | |
|--|--|
| DRING CO. <u>New Hampshire Boring</u> OPERMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>12 ft</u> DATUM <u>MLLW</u> DATE START <u>04-29-05</u> DATE END <u>05-02-05</u> |
|--|--|

| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 4" HW OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05-02-05</td> <td>0700</td> <td>7.9'</td> <td>33'</td> <td>64 Hours</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05-02-05 | 0700 | 7.9' | 33' | 64 Hours | | | | | | | | | | |
|---|--|-------|--------|--------------------|--------|--------------------|----------|------|------|-----|----------|--|--|--|--|--|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| 05-02-05 | 0700 | 7.9' | 33' | 64 Hours | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 10 | P | S-1 | 24/18 | 0-2 | 3-8 | Medium dense, brown/tan, fine to coarse SAND, trace (+) Silt | 1 | SAND (FILL) |
| | 22 | | | | 11-19 | | | |
| | 51 | S-2 | 24/13 | 2-4 | 16-25 | Dense, brown, fine to coarse SAND, trace (+) Silt, trace (-) fine Gravel | | |
| | 49 | | | | 22-25 | | | |
| | 11 | S-3A | 24/18 | 4-6 | 9-15 | S-3A: (top 9") Dense, brown, fine to medium SAND, trace (+) Silt | | |
| | 32 | S-3B | | | 17-21 | S-3B: (bottom 9") Dense, black, fine to coarse SAND, little (+) Silt, | | |
| | 37 | S-4A | 24/24 | 6-8 | 37-36 | trace (-) fine Gravel, trace (-) Wood, Ash (Petro Odor) | | |
| | 70 | S-4B | | | 35-39 | S-4A: (top 10") Very dense, brown, fine to medium SAND, trace (+) Silt | | |
| | 32 | S-5 | 24/16 | 8-10 | 76-45 | S-4B: (Bottom 14") Very dense, black, fine to coarse SAND, little | | |
| | 25 | | | | 31-45 | fine Gravel, trace Silt (Petro Odor) | | |
| 15 | 37 | S-6 | 24/18 | 10-12 | 13-19 | S-5: Very dense, black, fine to coarse SAND, little Silt, trace (+) fine Gravel (Petro Odor) | 3 | SAND |
| | 64 | | | | 21-51 | | | |
| | 46 | S-7 | 24/16 | 12-14 | 30-28 | S-6: Dense, black, fine to coarse SAND, little (-) Silt, trace fine Gravel (Petro Odor) | 4 | |
| | 45 | | | | 28-30 | | | |
| | 37 | S-8 | 24/16 | 14-16 | 17-17 | S-7: Very dense, black/red, fine to coarse SAND, trace (+) Silt, | 5 | |
| | 61 | | | | 38-34 | trace Twig, trace Brick (Petro Odor) | | |
| | 52 | S-9 | 24/17 | 16-18 | 22-42 | S-8: Very dense, black, fine to coarse SAND, trace (+) Silt, | 6 | |
| | 38 | | | | 37-34 | trace brick (Petro Odor) | | |
| | 52 | S-10 | 24/10 | 18-20 | 13-20 | S-9: Very dense, black, fine to coarse SAND, some (-) Silt, | 7 | |
| | 47 | | | | 13-13 | trace (-) fine Gravel (Petro Odor and Sheen) | | |
| 25 | 26 | S-11 | 24/14 | 20-22 | 13-21 | S-10: Dense, black/green, fine to coarse SAND, some (-) Silt, | 8 | SAND |
| | 24 | | | | 24-19 | trace (-) fine Gravel (Petro Odor and Sheen) | | |
| | 51 | | | | | S-11: Dense, gray, fine to coarse SAND, little (-) Silt, trace (+) fine to coarse Gravel | | |
| | 43 | S-12 | 24/5 | 23-25 | 18-19 | S-12: Dense, gray, fine to coarse SAND, trace (+) Silt, trace (-) fine Gravel | 9 | |
| | 42 | | | | 18-14 | | | |
| | 28 | | | | | | | |
| | 28 | | | | | | | |
| | 37 | | | | | | | |
| | 43 | S-13 | 24/6 | 28-30 | 15-10 | Medium dense, brown/gray, fine to coarse SAND, trace fine Gravel, | 10 | |
| | 45 | | | | 14-12 | trace (-) Silt | | |
| 35 | 47 | | | | | | 11 | SAND |
| | 48 | | | | | | | |
| | 43 | | | | | | | |
| | 46 | S-14 | 24/1 | 33-35 | 10-13 | Medium dense, gray, coarse GRAVEL | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Casing driven to 4', cleaned to 4' then S-3 (4-6') and S-4 (6-8') taken. |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 8', cleaned to 8', then S-5 (8-10') taken (Hard Drilling). |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Washed ahead to 10', then advance casing to 10', cleaned to 10' then S-6 (10-12'). |
| 30-50 DENSE | 8-15 STIFF | 4. Casing driven to 12', cleaned to 12' then S-7 (12-14') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 14', cleaned to 14' then S-8 (14-16') taken. |
| | >30 HARD | 6. Casing driven to 16', cleaned to 16' then S-9 (16-18') taken. |
| | | 7. Casing driven to 18', cleaned to 18', then S-10 (18-20') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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| BORING CO. <u>New Hampshire Boring</u> OPERMAN <u>Norm Stuttard</u> GZA ENG. <u>Joanne Kissinger/ Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>13 ft</u> DATUM <u>MLLW</u> DATE START <u>05-18-05</u> DATE END <u>05-20-05</u> |
|--|--|

| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05-19-05</td> <td>07:10</td> <td>6.36'</td> <td>19</td> <td>16.5</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05-19-05 | 07:10 | 6.36' | 19 | 16.5 | | | | | | | | | | |
|--|---|-------|--------|--------------------|--------|--------------------|----------|-------|-------|----|------|--|--|--|--|--|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| 05-19-05 | 07:10 | 6.36' | 19 | 16.5 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|---------------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | 1 | ±1' | |
| | | | | | | | ±2' CONCRETE RUBBLE | |
| | 11 | S-1 | 24/7 | 2-4 | 4-9 | | FILL | |
| | 14 | | | | 8-9 | | | |
| | 42 | S-2 | 24/14 | 4-6 | 16-8 | 2 | | |
| | 27 | | | | 9-9 | | | |
| | 12 | S-3 | 24/8 | 6-8 | 11-6 | 3 | FILL | |
| | 5 | | | | 3-7 | | | |
| | 17 | S-4 | 24/7 | 8-10 | 11-6 | 4 | | |
| | 16 | | | | 3-2 | | | |
| 10 | 4 | S-5 | 24/4 | 10-12 | 5-2 | 5 | FILL | |
| | 4 | | | | 1-1 | | | |
| | 2 | S-6 | 24/4 | 12-14 | 5-1 | 6 | | |
| | 4 | | | | 0-1 | | | |
| 15 | 10 | S-7 | 24/4 | 14-16 | 3-1 | 7 | ±14' | |
| | 8 | | | | 1-5 | | SAND | |
| | 11 | | | | | | | |
| | 9 | | | | | | | |
| | 15 | | | | | | | |
| 0 | 50 | S-8 | 24/6 | 19-21 | 13-12 | 8 | SAND | |
| | 26 | | | | 6-10 | | | |
| | 28 | | | | | | | |
| | 27 | | | | | | | |
| 25 | 30 | S-9 | 24/3 | 24-26 | 18-13 | 9 | SAND | |
| | 35 | | | | 18-16 | | | |
| | 35 | | | | | | | |
| | 40 | | | | | | | |
| 30 | 40 | S-10A | 24/14 | 29-31 | 8-6 | 10 | ±30' | |
| | 35 | S-10B | | | 8-10 | | SILT | |
| | 45 | | | | | | | |
| | 45 | | | | | | | |
| | 50 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. 0'-1' (PHD) Post Hole digger, Rollerbit concrete from 1'-2'. |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 4', cleaned to 4' then S-2 (4-6') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing driven to 6', cleaned to 6' then S-3 (6-8') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 8', cleaned to 8', then S-4 (8-10') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 10', cleaned to 10' then S-5 (10-12') taken. |
| | >30 HARD | 6. Casing driven to 12', cleaned to 12', then S-6 (12-14') taken. |
| | | 7. Casing driven to 16', cleaned to 16' then S-7 (14-16') taken. |
| | | 8. Casing driven to 19', cleaned to 19', then S-8 (19-21') taken. |
| | | 9. Casing driven to 24', cleaned to 24', then S-9 (24-26') taken. |
| | | 10. Casing driven to 29', cleaned to 29', then S-10 (29-31') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

BORING NO. GZ-215

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|--|--|
| BORING CO. <u>New Hampshire Boring</u> OPERMAN <u>Norm Stuttard</u> GZA ENG. <u>Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>13 ft</u> DATUM <u>MLLW</u> DATE START <u>05/16/05</u> DATE END <u>05/17/05</u> |
|--|--|

| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05-16-05</td> <td>1700</td> <td>8.29'</td> <td>29'</td> <td>30 Minutes</td> </tr> <tr> <td>5-20-05</td> <td></td> <td>8.36</td> <td>Well</td> <td>4 Days</td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05-16-05 | 1700 | 8.29' | 29' | 30 Minutes | 5-20-05 | | 8.36 | Well | 4 Days |
|--|---|-------|--------|--------------------|--------|--------------------|----------|------|-------|-----|------------|---------|--|------|------|--------|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | |
| 05-16-05 | 1700 | 8.29' | 29' | 30 Minutes | | | | | | | | | | | | |
| 5-20-05 | | 8.36 | Well | 4 Days | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|----------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | | | | | 1 | | |
| | P | | | | | 2 | | |
| | P | | | | | | SAND (FILL) | |
| | P | S-1 | 24/12 | 3-5 | 11-10 | | | |
| | P | | | | 7-7 | | | |
| | 7 | S-2 | 24/5 | 5-7 | 10-7 | 3 | | |
| | 17 | | | | 6-7 | ±7' | | |
| | 22 | S-3 | 24/14 | 7-9 | 11-8 | | SILT | |
| | 29 | | | | 4-2 | ±9' | | |
| 10 | 11 | S-4 | 24/4 | 9-11 | 9-5 | 4 | | |
| | 19 | | | | 3-3 | | SAND (FILL) | |
| | 22 | S-5 | 24/10 | 11-13 | 5-4 | | | |
| | 27 | | | | 4-7 | | | |
| 15 | 9 | S-6 | 24/1 | 13-15 | 7-4 | 5 | | |
| | 11 | | | | 2-1 | | | |
| | 9 | S-7 | 24/8 | 15-17 | 11-3 | 6 | | |
| | 16 | | | | 3-1 | ±17' | | |
| | 12 | S-8 | 24/16 | 17-19 | 7-3 | 7 | | |
| | 19 | | | | 3-1 | | | |
| 20 | 22 | S-9 | 24/16 | 19-21 | 3-1 | 8 | ORGANIC SILT | |
| | 26 | | | | 3-7 | | | |
| | 28 | | | | | | | |
| | 52 | | | | | | | |
| | 55 | | | | | | | |
| 25 | 47 | S-10 | 24/8 | 24-26 | 23-14 | 9 | | |
| | 40 | | | | 11-9 | | SAND (OUTWASH) | |
| | 44 | | | | | | | |
| | 73 | | | | | | | |
| | 68 | | | | | | | |
| 30 | 122 | S-11 | 24/16 | 29-31 | 33-16 | 10 | | |
| | 133 | | | | 18-23 | | | |
| | 138 | | | | | | | |
| | 140 | | | | | | | |
| | 139 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Dug by hand to clear utilities. |
| 4-10 LOOSE | 2-4 SOFT | 2. Concrete encountered at 1', cleared by KEYSpan and used rollerbit through concrete to 3' (2' thick) then S-1 (3-5') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Push 4" HW casing to 5', cleaned to 5' then S-2 (5-7') and S-3 (7-9') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 8', cleaned to 9' then S-4 (9-11') and S-5 (11-13') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 13', cleaned to 13' then S-16 (13-15'), possible pushing gravel. |
| | >30 HARD | 6. Casing driven to 15', cleaned to 15' then S-7 (15-17') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| EPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 50 | S-12 | 24/12 | 34-36 | 13-13 | Dense, brown SILT | 11 | SILT |
| | 65 | | | | 18-20 | | | |
| | 78 | | | | | | | |
| | 81 | | | | | | | |
| | 84 | | | | | | | |
| 45 | 70 | S-13 | 24/14 | 39-41 | 11-15 | Dense, brown SILT | 12 | SILT |
| | 83 | | | | 17-15 | | | |
| | 97 | | | | | | | |
| | 101 | | | | | | | |
| | 106 | | | | | | | |
| 55 | 119 | S-14 | 24/18 | 44-46 | 15-18 | Dense, brown/gray SILT | 13 | SILT |
| | 136 | | | | 25-26 | | | |
| | 140 | | | | | | | |
| | 159 | | | | | | | |
| | 198 | | | | | | | |
| 50 | | S-15 | 24/14 | 49-51 | 18-27 | Very dense, gray SILT | 14 | SILT |
| | | | | | 31-27 | | | |
| End of Exploration at ±51' | | | | | | | | |

| | | | |
|-------------------------|-------------------------|---|--|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: | |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 7. Casing driven to 17', cleaned to 17' then S-8 (17-19') taken. | 14. Groundwater well installed, screened from 15' to 5', riser from 5' to 0', guard pipe from 0' to (+) 3', filter sand from 16' to 4', bentonite seal from 4' to 3', cuttings from 3 to 1'. Capped off with cement from 1' to 0'. |
| 4-10 LOOSE | 2-4 SOFT | 8. Casing driven to 19', cleaned out to 19', then S-9 (19-21') taken. | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 9. Casing driven to 24', cleaned to 24', then S-10 (24-26') taken. | |
| 30-50 DENSE | 8-15 STIFF | 10. Casing driven to 29', cleaned to 29' then S-11 (29-31') taken. | |
| 50-75 VERY DENSE | 15-30 V. STIFF | 11. Casing driven to 34', cleaned to 34' then S-12 (34-36') taken. | |
| | >30 HARD | 12. Casing driven to 39', cleaned to 39' then S-13 (39-41') taken. | |
| | | 13. Casing driven to 44', cleaned to 44' then S-14 (44-46') taken. | |

NOTES:

- 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
- 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | |
|--|--|
| DRILLING CO. <u>New Hampshire Boring</u> OPERATOR <u>Charlie O'Donnel</u> GZA ENG. <u>Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>13 ft</u> DATUM <u>MLLW</u> DATE START <u>05-17-05</u> DATE END <u>05-18-05</u> |
|--|--|

| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05-18-05</td> <td>0730</td> <td>9.62'</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05-18-05 | 0730 | 9.62' | | | | | | | | | | | | |
|---|--|-------|--------|--------------------|--------|--------------------|----------|------|-------|--|--|--|--|--|--|--|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| 05-18-05 | 0730 | 9.62' | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|------------------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | S-1 | 24/14 | 2-4 | 10-9 | Medium dense, brown, fine to coarse SAND, trace (+) Silt, | FILL | |
| | P | | | | 8-8 | trace (-) fine Gravel | | |
| | 17 | S-2 | 24/8 | 4-6 | 14-11 | Medium dense, brown, fine to coarse SAND, trace (+) Silt, | | |
| | 15 | | | | 10-9 | trace (-) fine Gravel | ±6.25' | |
| | 3 | S-3 | 24/3 | 6-6.25 | 50/3" | Very dense, brown, fine to coarse SAND, trace (+) Silt, trace | ±6.75' CONCRETE RUBBLE | |
| | 7 | | | | 100/0" | (-) fine Gravel | ±8.75' | |
| | 7 | S-4 | 24/7 | 6.75-8.75 | 3-1-1-1 | S-4: Very Loose, Gray/black, fine to coarse SAND, some (+) Silt, | ±9' CONCRETE RUBBLE | |
| 10 | 10 | S-5 | 24/8 | 9-11 | 8-3 | trace fine Gravel | | |
| | 12 | | | | 12-4 | S-5: Medium dense, brown/black, fine SAND and SILT, | FILL | |
| | 15 | S-6 | 24/6 | 11-13 | 18-16 | trace fine Gravel, trace Roots | | |
| | 25 | | | | 10-8 | S-6: Medium dense, brown/black, fine to medium SAND, some | ±13' | |
| | 22 | S-7 | 24/3 | 13-15 | 14-7 | (+) Silt, trace iron Pipe, trace fine Gravel | ORGANIC SILT AND PEAT | |
| 15 | 18 | | | | 4-4 | S-7A: (top 2") Stiff, gray Organic SILT, trace (+) fine to coarse Sand | ±15' | |
| | 12 | S-8 | 24/6 | 15-17 | 5-2 | S-7B: (bottom 1") Stiff, black/gray SILT | | |
| | 9 | | | | 2-1 | and Fibrous Peat | | |
| | 8 | | | | | S-8: Soft, gray Organic SILT, trace (-) Wood, trace (-) fine to medium | ORGANIC SILT | |
| | 9 | | | | | Sand | | |
| 0 | 9 | S-9 | 24/5 | 19-21 | 5-2 | Soft, gray/black Organic SILT, trace (-) Peat, trace (-) Shells | | |
| | 11 | | | | 2-3 | | | |
| | 10 | | | | | | | |
| | 19 | | | | | | | |
| | 22 | | | | | | ±23.5' | |
| 25 | 35 | S-10 | 24/8 | 24-26 | 13-13 | Medium dense, gray, fine to coarse SAND, little (-) fine to | | |
| | 36 | | | | 12-11 | coarse Gravel, little (-) Silt | SAND | |
| | 34 | | | | | | | |
| | 40 | | | | | | | |
| | 30 | | | | | | | |
| 0 | 33 | S-11 | 24/11 | 29-31 | 24-13 | Dense, gray, fine to coarse SAND, some (-) fine to coarse | | |
| | 40 | | | | 17-18 | Gravel, trace (+) Silt | | |
| | 34 | | | | | | | |
| | 32 | | | | | | | |
| | 28 | | | | | | | |

| | | |
|------------------------------------|------------------------------------|--|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Hand excavated 0-2' with Post Hole Digger (PHD). |
| 4-10 LOOSE | 2-4 SOFT | 2. S-1 driven open hole. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing pushed to 4', cleaned to 4', then S-2 (4-6') taken. |
| 10-50 DENSE | 8-15 STIFF | 4. Casing driven to 6', cleaned to 6' then S-3 (6-8') taken spoon obstructed. KEYSpan re-checked utility paths |
| >50 VERY DENSE | 15-30 V. STIFF | and advised that slab may be present at 6.75' below ground surface. |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: B-1
 SHEET: 2 of 2
 PROJECT NO: 33554
 REVIEWED BY: MSK/MJP

Logged By: SDN/CA
 Drilling Co.: Geologic
 Foreman: JF

Type of Rig: Track Mounted
 Rig Model: CME
 Drilling Method:
 Drive+Wash

Boring Location: See Plan
 Ground Surface Elev. (ft.): NM
 Final Boring Depth (ft.): 31
 Date Start - Finish: 6/6/2014 - 6/6/2014

H. Datum: N/A
 V. Datum:
 N/A

Hammer Type: Safety Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D Dia (in.):
 4

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | |
| | | | | | 5 3 | | trace Coal, trace slag, trace Sand, trace Silt, trace Gravel, moderate oil-like odor, wet | | | 31 | FILL | -31.0 |
| 35 | | | | | | | End of exploration at 31 feet. | | | | | |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
B-1

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: B-2
 SHEET: 1 of 1
 PROJECT NO: 33554
 REVIEWED BY: MSK/MJP

Logged By: SDN/CA
 Drilling Co.: Geologic
 Foreman: JF

Type of Rig: Track Mounted
 Rig Model: CME
 Drilling Method:
 Drive+Wash

Boring Location: See Plan
 Ground Surface Elev. (ft.): NM
 Final Boring Depth (ft.): 11
 Date Start - Finish: 6/6/2014 - 6/6/2014

H. Datum: N/A
 V. Datum:
 N/A

Hammer Type: Safety Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D Dia (in.):
 4

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | SPT Value | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------|-------------|-----------|-----------|-------------------|-----------|---|--------|-----------------|-------------|-----------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 5 | | S-1 | 0-2 | 24 | 14 | 4 5 12 14 | 17 | S-1 : Medium dense, light brown (10YR, 5/4) fine to medium SAND, trace (+) Gravel, trace Silt, dry | 1 2 | ND | 0.2 | CRUSHED STONE | -0.2 |
| | | S-2 | 4-6 | 24 | 18 | 11 14 17 28 | 31 | S-2 : Dense, light brown (10YR, 5/4) fine to medium SAND, little Silt, moist | | ND | | PROCESSED IMPORT FILL | |
| | | S-3 | 9-11 | 24 | 16 | 15 12 8 5 | 20 | S-3 : 0-8" Medium dense, black (10YR, 2/1) fine to medium SAND, some Ash, little Coal, trace Slag, moderate oil-like odor, oil-like staining, dry | 3 | 272 362 | | FILL | |
| | | | | | | | | 8"-16" Medium dense, black (10YR, 2/1) SLAG and fine to medium SAND, some Ash, trace Coal, oil-like staining, oil-like coating, moderate oil-like odor, sheening, moist | | | 8 | | -8.0 |
| | | | | | | | | End of exploration at 11 feet. | | | 11 | | -11.0 |

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a MiniRae 3000 Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicated readings below the instruments detection limit of 0.1 ppmv. N/A= Not Applicable, NM=Not Measured, bgs=below ground surface, WOH=Weight of Hammer

2 - 2" crushed stone at the surface.

3 - Possible groundwater table encountered at 9 feet bgs.

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
B-2

GZA TEMPLATE TEST BORING, 2/11/2015, 10:32:35 AM



BORING LOG

BORING NO.: **B-1**
 SHEET: 1 OF 3
 PROJECT NO.: 15-0044
 DATE START: 2/24/2015
 DATE FINISH: 2/26/2015
 ELEVATION: N/A
 SWC REP.: C. CLARK

PROJECT / CLIENT: ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC
 LOCATION: 642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND
 DRILLING FIRM: CRAWFORD DRILLING SERVICES, LLC DRILLER: DARREL GREEN

| | TYPE | SIZE I.D. | HAMMER WT. | HAMMER FALL |
|--------------|------|-----------|------------|-------------|
| CASING: | HW | 4" | 140 lbs. | 30" |
| SAMPLER: | SS | 1-3/8" | 140 lbs. | 30" |
| CORE BARREL: | - | - | - | - |

WATER LEVEL INFORMATION
 GROUNDWATER MEASURED AT
 6.0 FT BELOW GROUND SURFACE

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) |
|-----------------------|--------|------|------|-------------|----------------------|------|-------|-------|-------|--|-------------------|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | |
| | 1D | 24" | 20" | 2.0' | 16 | 23 | 38 | 67 | 6.0' | DARK BROWN GRAVELLY SILTY SAND WITH SOME ASH FRAGEMENTS (FILL) (FROST OBSERVED TO 1.5 FEET) ~MEDIUM DENSE~ | 0.5 |
| | 2D | 24" | 6" | 6.0' | 10 | 9 | 8 | 6 | | | |
| | 3D | 24" | 8" | 8.0' | 9 | 6 | 4 | 4 | 13.0' | BROWN SILTY GRAVELLY SAND ~MEDIUM DENSE TO LOOSE~ w = 13.8% | ND |
| | 4D | 24" | 0" | 11.0' | 5 | 3 | 1 | WOH | | | |
| | 5D | 24" | 0" | 13.0' | 5 | 3 | 2 | 1 | | | |
| | 6D | 24" | 2" | 15.0' | 1 | 1 | WOH | WOH | 17.0' | DARK GRAY FINE SAND AND SILT WITH TRACE GRAVEL ~LOOSE~ | ND |
| | 7D | 24" | 0" | 17.0' | 1 | 1 | 3 | 4 | | | |
| | 8D | 24" | 12" | 19.0' | 6 | 3 | 6 | 4 | 21.0' | BLACK GRAVELLY SILTY ORGANIC SILT AND SOME SHELLS ~LOOSE~ w = 24.8% | ND |
| | 9D | 24" | 6" | 21.0' | 8 | 4 | 3 | 3 | | | |
| | 10D | 24" | 10" | 23.0' | 7 | 5 | 11 | 13 | | | |
| | 11D | 24" | 12" | 26.0' | 13 | 17 | 17 | 17 | 29.0' | BLACK SILTY GRAVELLY SAND WITH SLIGHT PETROLEUM ODOR ~DENSE~ | 2.0 |
| | 12D | 24" | 12" | 31.0' | 17 | 16 | 17 | 14 | | | |
| | 13D | 24" | 8" | 36.0' | 32 | 29 | 23 | 19 | 34.0' | BLACK GRAVELLY SILTY SAND WITH SLIGHT PETROLEUM ODOR ~DENSE~ | 2.0 |
| | | | | | | | | | | | |
| | | | | | | | | | | DARK GRAY SILTY GRAVEL AND SAND ~VERY DENSE~ w = 8.1% | ND |

SAMPLES: SOIL CLASSIFIED BY:
 D = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

| | |
|-------------------------------------|-----------------------|
| <input type="checkbox"/> | DRILLER - VISUALLY |
| <input checked="" type="checkbox"/> | SOIL TECH. - VISUALLY |
| <input checked="" type="checkbox"/> | LABORATORY TEST |

REMARKS: ppm= Parts per million, ND = Non-Detect, PID calibrated to 100 ppm isobutylene
 PID results have been corrected to MDEP set point.
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**





BORING LOG

BORING NO.: **B-1**
 SHEET: **2 OF 3**
 PROJECT NO.: **15-0044**
 DATE START: **2/24/2015**
 DATE FINISH: **2/26/2015**
 ELEVATION: **N/A**
 SWC REP.: **C. CLARK**

PROJECT / CLIENT: **ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC**
 LOCATION: **642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND**
 DRILLING FIRM: **CRAWFORD DRILLING SERVICES, LLC** DRILLER: **DARREL GREEN**

| | TYPE | SIZE I.D. | HAMMER WT. | HAMMER FALL |
|--------------|------|-----------|------------|-------------|
| CASING: | HW | 4" | 140 lbs. | 30" |
| SAMPLER: | SS | 1-3/8" | 140 lbs. | 30" |
| CORE BARREL: | - | - | - | - |

WATER LEVEL INFORMATION
 GROUNDWATER MEASURED AT
6.0 FT BELOW GROUND SURFACE

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--------|------|------|-------------|----------------------|------|-------|-------|-------|--|-------------------|--|-----|-----|-----|-------|----|----|----|----|-------|--|----|--|--|--|--|--|--|--|--|--|--|-----|-----|-----|-------|----|----|----|----|-------|--|----|--|--|--|--|--|--|--|--|--|--|-----|-----|----|-------|----|----|----|----|-------|--|----|--|--|--|--|--|--|--|--|--|--|-----|-----|----|-------|----|----|----|----|-------|--|----|--|--|--|--|--|--|--|--|--|--|-----|-----|----|-------|----|----|----|----|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 14D | 24" | 4" | 41.0' | 10 | 17 | 14 | 17 | 46.0' | DARK GRAY SILTY SAND AND GRAVEL ~DENSE TO MEDIUM DENSE~ | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 15D | 24" | 10" | 46.0' | 14 | 13 | 13 | 15 | 59.0' | BROWN / GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE TO VERY DENSE~ w = 9.9% | ND | | | | | | | | | | | 16D | 24" | 12" | 51.0' | 26 | 23 | 26 | 22 | 59.0' | GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 17D | 24" | 0" | 56.0' | 44 | 34 | 26 | 20 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 |
| | 15D | 24" | 10" | 46.0' | 14 | 13 | 13 | 15 | 59.0' | BROWN / GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE TO VERY DENSE~ w = 9.9% | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 16D | 24" | 12" | 51.0' | 26 | 23 | 26 | 22 | 59.0' | GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 17D | 24" | 0" | 56.0' | 44 | 34 | 26 | 20 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | |
| | 16D | 24" | 12" | 51.0' | 26 | 23 | 26 | 22 | 59.0' | GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 17D | 24" | 0" | 56.0' | 44 | 34 | 26 | 20 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 17D | 24" | 0" | 56.0' | 44 | 34 | 26 | 20 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

SAMPLES: SOIL CLASSIFIED BY:

| | | |
|----------------------|-------------------------------------|-----------------------|
| D = SPLIT SPOON | <input type="checkbox"/> | DRILLER - VISUALLY |
| C = 3" SHELBY TUBE | <input checked="" type="checkbox"/> | SOIL TECH. - VISUALLY |
| U = 3.5" SHELBY TUBE | <input checked="" type="checkbox"/> | LABORATORY TEST |

REMARKS: ppm= Parts per million, ND = Non-Detect, PID calibrated to 100 ppm isobutylene
 PID results have been corrected to MDEP set point.

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**



BORING LOG

BORING NO.: **B-1**
 SHEET: 3 OF 3
 PROJECT NO.: 15-0044
 DATE START: 2/24/2015
 DATE FINISH: 2/26/2015
 ELEVATION: N/A
 SWC REP.: C. CLARK

PROJECT / CLIENT: ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC
 LOCATION: 642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND
 DRILLING FIRM: CRAWFORD DRILLING SERVICES, LLC DRILLER: DARREL GREEN

| | TYPE | SIZE I.D. | HAMMER WT. | HAMMER FALL |
|--------------|------|-----------|------------|-------------|
| CASING: | HW | 4" | 140 lbs. | 30" |
| SAMPLER: | SS | 1-3/8" | 140 lbs. | 30" |
| CORE BARREL: | - | - | - | - |

WATER LEVEL INFORMATION
 GROUNDWATER MEASURED AT
 6.0 FT BELOW GROUND SURFACE

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) |
|-----------------------|--------|------|------|-------------|----------------------|------|-------|-------|--------|---|-------------------|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | |
| | 20D | 24" | 6" | 81.0' | 82 | 96 | 32 | 13 | 89.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) BOULDER ENCOUNTERED FROM 85.5 TO 86.5 FEET ~VERY DENSE~ | ND |
| | 21D | 24" | 4" | 91.0' | 24 | 26 | 30 | 36 | | GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~VERY DENSE~ | ND |
| | 22D | 24" | 8" | 101.0' | 25 | 22 | 28 | 30 | 101.0' | BOTTOM OF TEST BORING AT APPROXIMATELY 101.0 FEET | ND |

SAMPLES: D = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:

| | |
|-------------------------------------|-----------------------|
| <input type="checkbox"/> | DRILLER - VISUALLY |
| <input checked="" type="checkbox"/> | SOIL TECH. - VISUALLY |
| <input checked="" type="checkbox"/> | LABORATORY TEST |

REMARKS: ppm= Parts per million, ND = Non-Detect, PID calibrated to 100 ppm isobutylene
 PID results have been corrected to MDEP set point.

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**



BORING LOG

BORING NO.: **B-2**
 SHEET: 1 OF 2
 PROJECT NO.: 15-0044
 DATE START: 6/5/2015
 DATE FINISH: 6/5/2015
 ELEVATION: N/A
 SWC REP.: E.BARON

PROJECT / CLIENT: ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC
 LOCATION: 642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND
 DRILLING FIRM: CRAWFORD DRILLING SERVICES, LLC DRILLER: DARREL GREEN

| | TYPE | SIZE I.D. | HAMMER WT. | HAMMER FALL |
|--------------|------|-----------|------------|-------------|
| CASING: | HW | 4" | 140 lbs. | 30" |
| SAMPLER: | SS | 1-3/8" | 140 lbs. | 30" |
| CORE BARREL: | - | - | - | - |

WATER LEVEL INFORMATION
 6.0' based on soil saturation

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) |
|-----------------------|--------|------|------|-------------|----------------------|------|--------|-------|-------|---|-------------------|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | |
| | 1D | 24" | 19" | 2.0' | 4 | 7 | 12 | 30 | 2.0' | DK BROWN, SILTY F-M SAND WITH BRICK ~MEDIUM DENSE~ | 0.3 |
| | 2D | 19" | 19" | 3.6' | 24 | 50 | 50/0.1 | | 4.0' | LT BROWN, SILTY F-M SAND, SOME GRAVEL | 12.3 |
| | 3D | 24" | 13" | 6.0' | 27 | 23 | 20 | 11 | 7.0' | GRAY, SILTY GRAVELLY F-C SAND, POCKETS OF BLACK MATERIAL WITH HEAVY PETROLEUM ODOR ~MEDIUM DENSE TO DENSE~ | 0.3 |
| | 4D | 24" | 11" | 8.0' | 13 | 15 | 12 | 11 | | | 63 |
| | 5D | 24" | 9" | 11.0' | 9 | 9 | 10 | 21 | 9.0' | GRAY, SILTY F-C SAND, SOME GRAVEL, MODERATE PETROLEUM ODOR ~MEDIUM DENSE~ | 89 |
| | 6D | 24" | 6" | 13.0' | 7 | 12 | 10 | 9 | 14.0' | GRAY, FINE SAND AND SILT, MODERATE PETROLEUM ODOR ~MEDIUM DENSE~ | 124 |
| | 7D | 24" | 24" | 16.0' | 6 | 7 | 9 | 10 | | | 169 |
| | 8D | 24" | 24" | 18.0' | 6 | 9 | 11 | 10 | 19.9' | BROWN, FINE SANDY SILT, SLIGHT PETROLEUM ODOR ~MEDIUM DENSE~ | 212 |
| | 9D | 24" | 14" | 21.0' | 8 | 9 | 12 | 18 | | | 117 |
| | 10D | 24" | 11" | 23.0' | 8 | 10 | 12 | 10 | 29.0' | BLACK-GRAY, F-C SAND AND GRAVEL, SLIGHT PETROLEUM ODOR ~MEDIUM DENSE~ | 88 |
| | 11D | 24" | 0" | 26.0' | 18 | 17 | 11 | 13 | | | 32 |
| | 12D | 24" | 0" | 31.0' | 34 | 30 | 27 | 22 | 34.0' | DK GRAY, SILTY F-C SAND, SOME GRAVEL, SLIGHT PETROLEUM ODOR ~DENSE TO VERY DENSE~ | 27 |
| | 13D | 24" | 3" | 33.0' | 23 | 21 | 20 | 24 | | | 69 |
| | 14D | 24" | 15" | 36.0' | 8 | 8 | 14 | 13 | | GRAY-BLACK, SILTY F-M SAND, HEAVY PETROLEUM ODOR ~MEDIUM DENSE~ | 89 |
| | 15D | 24" | 14" | 41.0' | 7 | 8 | 10 | 11 | | | |

SAMPLES: SOIL CLASSIFIED BY:
 D = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

| | |
|---|-----------------------|
| | DRILLER - VISUALLY |
| X | SOIL TECH. - VISUALLY |
| | LABORATORY TEST |

REMARKS: ppm= Parts per million, ND = Non-Detect
 PID calibrated to 100 ppm isobutylene
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.



BORING LOG

BORING NO.: **B-2**
 SHEET: **2 OF 2**
 PROJECT NO.: **15-0044**
 DATE START: **6/5/2015**
 DATE FINISH: **6/5/2015**
 ELEVATION: **N/A**
 SWC REP.: **E.BARON**
 WATER LEVEL INFORMATION
6.0' based on soil saturation

PROJECT / CLIENT: **ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC**
 LOCATION: **642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND**
 DRILLING FIRM: **CRAWFORD DRILLING SERVICES, LLC** DRILLER: **DARREL GREEN**


| | TYPE | SIZE I.D. | HAMMER WT. | HAMMER FALL |
|--------------|------|-----------|------------|-------------|
| CASING: | HW | 4" | 140 lbs. | 30" |
| SAMPLER: | SS | 1-3/8" | 140 lbs. | 30" |
| CORE BARREL: | - | - | - | - |

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) |
|-----------------------|--------|------|------|-------------|----------------------|------|-------|-------|-------|--|-------------------|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | |
| | | | | | | | | | | GRAY-BLACK, SILTY F-M SAND, HEAVY PETROLEUM ODOR | 53 |
| | | | | | | | | 44.0' | | | |
| | 16D | 24" | 13" | 46.0' | 7 | 13 | 13 | 14 | 46.0' | | |
| | | | | | | | | | | BOTTOM OF TEST BORING AT APPROXIMATELY 46.0 FEET | |


SAMPLES: SOIL CLASSIFIED BY: DRILLER - VISUALLY
 D = SPLIT SPOON SOIL TECH. - VISUALLY
 C = 3" SHELBY TUBE LABORATORY TEST
 U = 3.5" SHELBY TUBE

REMARKS: ppm= Parts per million, ND = Non-Detect
 PID calibrated to 100 ppm isobutylene
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.


5
 BORING NO.: **B-2**


| | | | | | | | | | |
|--|---------------------|------------|-----------|---|----------------------|------------------------------|--------------|---|--|
| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | | BORING NO. SB-01 Page No. 1 of 2 | |
| Client | Kiewit | | | GS Elev. N/A ft. | | # of SPT Samples 13 | | | |
| Contractor | Geologic | | | Boring Coordinates N/A | | Length of Rock core - ft | | | |
| Driller | Dave | | | | | Total Depth of Boring 71 ft. | | | |
| WAI Rep. | Shawn Ingram (Roux) | | | EQUIPMENT | CASING | SAMPLER | CORE | | |
| DATE | Start | Finish | Type | | Split Spoon | | | | |
| | 6/3/2015 | 6/3/2015 | Size I.D. | 4" | 2" | | | | |
| Boring Location | See attached plan | | | Hammer Wt. | Hyd. | Hyd. | | | |
| | | | | Hammer Fall | | | | # of Shelby Tubes 1 | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description | |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | | |
| 5 | SS-1 | 6-8 | 24 | 10 | 12/4/3/3 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SP); ~80% fine to medium sand; ~15% fine gravel; <5% fines; gray; petroleum odor. | |
| 10 | SS-2 | 9-11 | 24 | 0 | 4/2/2/3 | | | No Recovery. | |
| 15 | SS-3 | 14-16 | 24 | 2 | 5/3/2/1 | | | NARROWLY GRADED GRAVEL (GW); fine gravel; <5% sand and fines; gray; petroleum odor and sheen. | |
| 20 | SS-4 | 19-21 | 24 | 28 | woh(18")/2 | | ORGANIC SILT | SILT (ML); homogeneous organic silt; <10% fine sand; dark gray. | |
| | US-1 | 22-23 | 30 | 15 | Push | | | Shelby tube undisturbed sample. | |
| 25 | SS-5 | 24-26 | 24 | 18 | 1/woh/1/1 | | | WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% fine to medium subrounded sand; ~20% subangular fine gravel; ~10% fines; dark gray. | |
| 30 | SS-6 | 29-31 | 24 | 12 | 2/13/12/7 | | | WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% fine to medium subrounded sand; ~20% subangular fine gravel; ~10% fines; dark gray. | |
| 35 | SS-7 | 34-36 | 24 | 14 | 13/9/10/6 | | SILT | WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% fine to medium subrounded sand; ~20% subangular fine gravel; ~10% fines; brown. | |
| 40 | SS-8 | 39-41 | 24 | 15 | 5/6/8/10 | | | SILT (ML); homogeneous silt; <5% sand; brown. | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-01 | |


| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|-------|--------------------|------------|----------|-----------|------------------------|--|--------------------|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 45 | SS-9 | 44-46 | 24 | 18 | 5/6/9/10 | | SILT (ML); homogeneous silt; <5% fine sand; light gray. | |
| 50 | SS-10 | 49-51 | 24 | 16 | 9/6/11/9 | | SILT (ML); homogeneous silt; <5% fine sand and fine gravel; light gray. | |
| 55 | SS-11 | 54-56 | 24 | 18 | 5/7/10/9 | | WIDELY GRADED SAND (SW); fine to medium subrounded sand; >5% fines; light brown and light gray. | |
| 60 | SS-12 | 59-61 | 24 | 13 | 7/9/11/9 | | WIDELY GRADED SAND (SW); fine to medium subrounded sand; >5% fines; light brown and light gray. | |
| 65 | | | | | | | | |
| 70 | SS-13 | 69-71 | 24 | 20 | 8/8/12/10 | | WIDELY GRADED SAND (SW); ~80% fine to medium subrounded sand; ~15% fine gravel; >5% fines; light brown and light gray. | |
| 75 | | | | | | | Bottom of Boring, 71 feet | |
| 80 | | | | | | | | |
| 85 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-01 |

| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | | BORING NO. SB-02 Page No. 1 of 2 | |
|--|---------------------|------------|----------|---|----------------------|------------------------|------------------|--|--------|
| Client | Kiewit | | | GS Elev. | N/A ft. | | # of SPT Samples | 14 | |
| Contractor | Geologic | | | Boring Coordinates | | N/A | | Length of Rock core | - ft |
| Driller | Dave | | | EQUIPMENT | CASING | SAMPLER | CORE | Total Depth of Boring | 71 ft. |
| WAI Rep. | Shawn Ingram (Roux) | | | Type | | Split Spoon | | # of Shelby Tubes | 0 |
| DATE | Start | Finish | | Size I.D. | 4" | 2" | | | |
| | 6/2/2015 | 6/2/2015 | | Hammer Wt. | Hyd. | Hyd. | | | |
| Boring Location | See attached plan | | | Hammer Fall | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description | |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | | |
| 5 | SS-1 | 6-8 | 24 | 9 | 9/6/6/4 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. | |
| 10 | SS-2 | 9-11 | 24 | 4 | 3/3/3/4 | | | NARROWLY GRADED GRAVEL (GP); mostly fine subangular gravel; <5% fines; brown and gray. | |
| 15 | SS-3 | 14-16 | 24 | 5 | 2/woh/1/1 | | | NARROWLY GRADED GRAVEL WITH SAND (GP); ~60% fine subangular gravel; ~40% fine to coarse, subrounded sand; gray; petroleum odor. | |
| 20 | SS-4 | 19-21 | 24 | 7 | 12/6/6/3 | | | WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% fine to medium sand; ~30% fine subangular gravel; ~10% fines; dark gray. | |
| 25 | SS-5 | 24-26 | 24 | 8 | 12/6/6/3 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to medium sand; ~25% fine subangular gravel; <5% fines; dark gray. | |
| 30 | SS-6 | 29-31 | 24 | 10 | 5/3/3/3 | | | WIDELY GRADED SAND (SW); Mostly fine to medium sand; <5% fines and fine subangular fine gravel; gray. | |
| 35 | SS-7 | 34-36 | 24 | 18 | 3/1/woh/9 | | ORGANIC SILT | WIDELY GRADED SAND (SW) and SILT WITH SAND (ML); Mostly fine to medium sand; <5% fines; A stratified layer (4 inches) organic silt; dark gray. | |
| 40 | SS-8 | 39-41 | 24 | 12 | 13/9/23/17 | | SAND | WIDELY GRADED SAND WITH GRAVEL; ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; >5% fines; brown. | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-02 | |

| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|-------|--------------------|------------|----------|-------------|------------------------|--------|--|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 45 | SS-9 | 44-46 | 24 | 10 | 9/7/7/7 | | SAND | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 50 | SS-10 | 49-51 | 24 | 10 | 6/6/8/7 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light gray and light brown. |
| 55 | SS-11 | 54-56 | 24 | 8 | 8/7/8/7 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light gray and light brown. |
| 60 | SS-12 | 59-61 | 24 | 12 | 3/3/7/7 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; dark brown. |
| 65 | SS-13 | 64-66 | 24 | 12 | 13/16/17/16 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 70 | SS-14 | 69-71 | 24 | 12 | 12/15/18/18 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 75 | | | | | | | | Bottom of Boring, 71 feet |
| 80 | | | | | | | | |
| 85 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-02 |

| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | | BORING NO. SB-04 Page No. 1 of 2 | |
|--|---------------------|------------|----------|---|----------------------|------------------------|------------------|--|--------|
| Client | Kiewit | | | GS Elev. | N/A ft. | | # of SPT Samples | 10 | |
| Contractor | Geologic | | | Boring Coordinates | | N/A | | Length of Rock core | - ft |
| Driller | Dave | | | EQUIPMENT | CASING | SAMPLER | CORE | Total Depth of Boring | 51 ft. |
| WAI Rep. | Shawn Ingram (Roux) | | | Type | | Split Spoon | | # of Shelby Tubes | 2 |
| DATE | Start | Finish | | Size I.D. | 4" | 2" | | | |
| | 6/1/2015 | 6/1/2015 | | Hammer Wt. | Hyd. | Hyd. | | | |
| Boring Location | See attached plan | | | Hammer Fall | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description | |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | | |
| 5 | SS-1 | 6-8 | 24 | 5 | 7/4/4/3 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; gray. | |
| 10 | SS-2 | 9-11 | 24 | 5 | 8/6/5/4 | | | WIDELY GRADED SAND WITH SILT (SW-SM); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; gray; petroleum odor. | |
| 15 | SS-3 | 14-16 | 24 | 10 | 7/4/3/3 | | | SILT WITH GRAVEL (ML); medium plasticity organic silt; >5% fine subangular gravel; dark gray. | |
| 20 | SS-4 | 19-21 | 24 | 11 | 3/1/2/1 | | | WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray. Shelby tube undisturbed sample. | |
| 25 | US-1 | 21-23 | 30 | 24 | Push | | | | |
| 25 | SS-5 | 24-26 | 24 | 17 | woh(12")/2/1 | | ORGANIC SILT | WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray. | |
| 30 | SS-6 | 29-31 | 24 | 18 | 8/6/5/4 | | | WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray. Shelby tube undisturbed sample. | |
| 30 | US-2 | 31-33 | 30 | 22 | Push | | | | |
| 35 | SS-7 | 34-36 | 24 | 24 | 6/6/5/4 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium sand; ~20% fine subangular fine gravel; gray. | |
| 40 | SS-8 | 39-41 | 24 | 24 | 1/2/3/9 | | | SILT WITH SAND (ML); ~85% medium plasticity organic silt; ~15% fine sand; dark gray. | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-04 | |

| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | Project Providence LNG Location Providence, RI Project No. 21524028 | BORING NO. SB-04 Page No. 2 of 2 | | | | | |
|--|--------------------|---|-------------------------------------|----------|----------------------|------------------------|--------|--|
| Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | |
| 45 | SS-9 | 44-46 | 24 | 14 | 24/18/16/14 | | SAND | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; brown and gray. |
| 50 | SS-10 | 49-51 | 24 | 8 | 23/12/13/13 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; brown and gray. |
| 55 | | | | | | | | Bottom of Boring, 51 feet |
| 60 | | | | | | | | |
| 65 | | | | | | | | |
| 70 | | | | | | | | |
| 75 | | | | | | | | |
| 80 | | | | | | | | |
| 85 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-04 |

| | | | | | | | | | |
|--|---------------------|------------|-----------|---|----------------------|-------------------------------|---------------------|--|--|
| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | | BORING NO. SB-06 Page No. 1 of 3 | |
| Client | Kiewit | | | GS Elev. _____ ft. | | # of SPT Samples 19 | | | |
| Contractor | Geologic | | | Boring Coordinates _____ | | Length of Rock core _____ ft | | | |
| Driller | Ray and Dave | | | | | | | | |
| WAI Rep. | Shawn Ingram (Roux) | | | EQUIPMENT | CASING | SAMPLER | CORE | | |
| DATE | Start | Finish | Type | | Split Spoon | Total Depth of Boring 101 ft. | | | |
| | 7/16/2015 | 7/17/2015 | Size I.D. | 4" | 2" | | | | |
| Boring Location | | | | Hammer Wt. | Hyd. | Hyd | # of Shelby Tubes 3 | | |
| | | | | Hammer Fall | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description | |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | | |
| 5 | SS-1 | 0-2 | 24 | 18 | 6/9/12/11 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light brown. | |
| | SS-2 | 4-6 | 24 | 15 | 5/3/3/2 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light brown. | |
| 10 | SS-3 | 9-10.5 | 18 | 8 | 6/4/5/78 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light brown; Stone/concrete foundation prevented advancing spoon past 10.5 ft. concrete | |
| 15 | SS-4 | 14-16 | 24 | 10 | 7/4/5/4 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; black; petroleum odor. | |
| 20 | SS-5 | 19-21 | 24 | 24 | w.o.h | | ORGANIC SILT | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| | US-1 | 21-23 | 30 | 25 | Push | | | Shelby tube. Undisturbed | |
| 25 | US-2 | 24-26 | 30 | 23 | Push | | | Shelby tube. Undisturbed | |
| | US-3 | 27-29 | 30 | 25 | Push | | | Shelby tube. Undisturbed | |
| 30 | SS-6 | 29-31 | 24 | 24 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| 35 | SS-7 | 34-36 | 24 | 5 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; shell fragment clogged the spoon and impacted recovery; dark gray. | |
| 40 | SS-8 | 39-41 | 24 | 24 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-06 | |

| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|-------|--------------------|------------|----------|-------------|---------|---|-----------------------|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 45 | SS-9 | 44-46 | 24 | 24 | w.o.h | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| 50 | SS-10 | 49-51 | 24 | 24 | w.o.h | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| 55 | SS-11 | 54-56 | 24 | 24 | woh/woh/3/3 | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| 60 | SS-12 | 59-61 | 24 | 24 | woh/12/6/3 | | 59-60 - SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. 60-60.5 - WIDELY GRADED SAND (SW); ~95% F to M sand; gray 60.5-61 - SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| 65 | SS-13 | 64-66 | 24 | 15 | 3/2/5/4 | | 64-65 - WIDELY GRADED SAND (SW); ~95% F to C sand; gray 65-66 - SILT (ML); ~90% silt; ~10% fine sand; dark brown. | |
| 70 | SS-14 | 69-71 | 24 | 6 | 8/6/5/4 | | WIDELY GRADED SAND (SW); ~95% F to C sand; gray | |
| 75 | SS-15 | 74-76 | 24 | 1 | 3/2/3/4 | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| 80 | SS-16 | 80-81 | 24 | 24 | woh/woh/3/4 | | 70-80 - SILT (ML); ~95% organic silt; black. 80-81 - SILT (ML); ~95% organic silt; dark gray. | |
| 85 | SS-17 | 84-86 | 24 | 20 | 6/11/9/12 | | WIDELY GRADED SAND (SW); ~95% F to M sand; gray | |
| Notes: | | | | | | PROJECT | Providence LNG | Borehole No. SB-06 |

| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|-------|--------------------|------------|----------|-----------|------------------------|--------|---|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 90 | SS-18 | 89-91 | 24 | 0 | 7/7/12/7 | | SAND | No recovery |
| 100 | SS-19 | 99-101 | 24 | 18 | 9/9/14/22 | | | WIDELY GRADED SAND (SW); ~95% F to M sand; light brown. |
| 105 | | | | | | | | BOTTOM OF BORING, 101 FT |
| 110 | | | | | | | | |
| 115 | | | | | | | | |
| 120 | | | | | | | | |
| 125 | | | | | | | | |
| 130 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-06 |

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-401
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN
Drilling Co.: Geosearch
Foreman: Shawn Preston

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
HSA & Soil Vactor

Boring Location: See Plan
Ground Surface Elev. (ft.): 12
Final Boring Depth (ft.): 20
Date Start - Finish: 10/30/2015 - 11/2/2015

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 11/3/15 | 12:00 | 8.71 | 24 Hours |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|-----------|-----------------|--------|------|---------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 0-2 | 1 | 0-2 | NA | NA | NA | 1 : (0-1') : Light brown (10yr 5/4) fine to medium SAND, little Gravel, trace Silt, Dry 2 : (1'-2') : Black (10yr 2/1) SLAG, little coal, little fine to coarse sand, trace Silt, trace Gravel, trace Ash, trace Brick, dry | 1 | ND | | | | |
| | 2 | 2-4 | NA | NA | NA | 2 : Black (10yr 2/1) SLAG, little coal, little fine to coarse sand, trace Silt, trace Gravel, trace Ash, trace Brick, dry | 2 | ND | | | | |
| 4-6 | 3 | 4-6 | NA | NA | NA | 3 : Brown (10yr 3/3) fine to coarse SAND, little Silt, trace(+) Gravel, trace(+) Slag, trace Coal, trace Brick, Moist | 3 | ND | | | | |
| | 4 | 6-8 | 24 | 12 | 3 1 3 14 | 4 : (0-06") : Brown (10yr 3/3) fine to coarse SAND, little Silt, trace(+) Gravel, trace(+) Slag, trace Coal, trace Brick, Moist 5 : (6-12") : Dark gray (10yr 4/2) fine to coarse SAND, little Silt, little Gravel, Wet | 1.9 ND | | | | | |
| 8-10 | 5 | 8-10 | 24 | 12 | 15 10 4 6 | 5 : Medium dense, dark gray (10yr 4/2) fine to coarse SAND, little Silt, little Gravel, Wet | 10.9 | | | FILL | | |
| | 6 | 10-12 | 24 | 14 | 17 9 6 7 | 6 : Medium dense black (10yr 2/1) fine to coarse SAND, little Slag, little Gravel, trace Brick, trace Silt, Wet | 3.2 | | | | | |
| 12-14 | 7 | 12-14 | 24 | 14 | 13 11 7 7 | 7 : Medium dense black (10yr 2/1) fine to coarse SAND, little Slag, little Gravel, trace Brick, trace Silt, Wet | 1.0 | | | | | |
| | 8 | 14-16 | 24 | 12 | 4 5 4 5 | 8 : Loose, black (10yr 2/1) fine to coarse SAND, little Slag, little Gravel, trace Brick, trace Silt, Wet | 0.5 | | | | | |
| 16-18 | 9 | 16-18 | 24 | 3 | 7 5 4 3 | 9 : Stiff dark brown (10yr 3/3) ORGANIC SILT, little fine to coarse Sand, trace Gravel, trace Shells, Organic Odor, Wet | 0.5 | | | | | 16 - - - - -4.0 |
| | 10 | 18-20 | 24 | 3 | WOH WOH 1 2 | 10 : Soft, dark brown (10yr 3/3) ORGANIC SILT, little fine to coarse Sand, trace Gravel, trace Shells, Organic Odor, Wet | 0.5 | | | | | ORGANIC SILT |
| 20 | | | | | | End of exploration at 20 feet. | | | | | 20 - - - - -8.0 | |

REMARKS
1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. 2. The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring. 3 - Water table was observed at 6 feet bgs during drilling. 4. A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 14 feet bgs, 2" Diameter, Schedule 40, flush joint, PVC Riser installed from 0-4 feet bgs. Filter Sand placed in annulus from 3-15 feet bgs. Bentonite Seals installed from 2-3 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-401

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
 Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-402
 SHEET: 1 of 1
 PROJECT NO: 33554
 REVIEWED BY: MSK

Logged By: SN
 Drilling Co.: Geosearch
 Foreman: Shawn Preston

Type of Rig: Truck Mounted
 Rig Model: CME
 Drilling Method:
 HSA & Soil Vactor

Boring Location: See Plan
 Ground Surface Elev. (ft.): 11.9
 Final Boring Depth (ft.): 20
 Date Start - Finish: 10/30/2015 - 11/2/2015

H. Datum:
 NAD 83
 V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 5 | 1 | 0-2 | NA | NA | NA | 1 : Brown (10yr 3/4) fine to coarse SAND, little Silt, trace(+) Gravel, trace Slag, trace Coal, trace Brick, trace Ash, dry | 1 | ND | | | | | | No Equipment Installed |
| | 2 | 2-4 | NA | NA | NA | 2 : Brown (10yr 3/4) fine to coarse SAND, little Silt, trace(+) Gravel, trace Slag, trace Coal, trace Brick, trace Ash, dry | 2 | ND | | | | | | |
| 10 | 3 | 4-6 | NA | NA | NA | 3 : Brown (10yr 3/4) fine to coarse SAND, little Silt, trace(+) Gravel, trace Slag, trace Coal, trace Brick, trace Ash, dry | | ND | | | | | | |
| | 4 | 6-8 | 24 | 16 | 3 3 9 16 | 4 : Medium dense, brown (10yr 3/4) fine to coarse SAND, little Silt, trace(+) Gravel, trace Slag, trace Coal, trace Brick, trace Ash, dry. Bands of coal present throughout sample, wet. | 3 | ND | | | | | | |
| 15 | 5 | 8-10 | 24 | 13 | 16 10 8 6 | 5 : Medium dense, brown (10yr 3/4) fine to coarse SAND, little Silt, trace(+) Gravel, trace Slag, trace Coal, trace Brick, trace Ash, dry. Bands of coal present throughout sample, wet. | | 1 | | | | FILL | | |
| | 6 | 10-12 | 24 | 13 | 3 6 10 11 | 6 : Medium dense, grey (10yr 4/1) fine to medium SAND, trace(+) Gravel, trace Silt, wet | | ND | | | | | | |
| 20 | 7 | 12-14 | 24 | 8 | 10 8 8 6 | 7 : Medium dense, gray (10yr 3/1) fine to coarse SAND, some Gravel, trace(+) Silt, trace Brick, wet | | ND | | | | | | |
| | 8 | 14-16 | 24 | 0 | 3 2 6 6 | 8 : No Recovery (loose granular soils) | | NM | | | | | | |
| 25 | 9 | 16-18 | 24 | 3 | 1 1 1 1 | 9 : Very loose grey (10yr 3/1) fine to coarse SAND, some Gravel, trace(+) Silt, wet | | 0.5 | | | | | | |
| | 10 | 18-20 | 24 | 22 | WOH 1 2 | 10 : Very soft, dark grey (10yr 3/1) Organic Silt, wet | | ND | | | 18 | -6.1 | | |
| | | | | | | End of exploration at 20 feet. | | | | | 20 | -8.1 | | |

REMARKS

- The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv.
- The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
- Water table was observed at 6 feet bgs during drilling.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-402

GZA TEMPLATE TEST BORING WIEQUIP NGRIDNE; 11/19/2015; 10:49:01 AM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-403
 SHEET: 1 of 1
 PROJECT NO: 33554
 REVIEWED BY: MSK

Logged By: SN
 Drilling Co.: Geosearch
 Foreman: Shawn Preston

Type of Rig: Truck Mounted
 Rig Model: CME
 Drilling Method:
 HSA & Soil Vactor

Boring Location: See Plan
 Ground Surface Elev. (ft.): 11.5
 Final Boring Depth (ft.): 20
 Date Start - Finish: 10/30/2015 - 11/2/2015

H. Datum:
 NAD 83
 V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 11/3/15 | 12:00 | 7.43 | 24 Hours |

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 5 | 1 | 0-2 | NA | NA | NA | 1 : (0-1'): Dark brown (10yr 3/3) fine to coarse SAND, little Silt, little Gravel, trace Slag, dry (1-2'): Light brown (10yr 5/4) fine to coarse SAND, little Gravel, trace Silt, trace Slag, slight blue staining, wet | 1 | ND | | | | | | |
| | 2 | 2-4 | NA | NA | NA | 2 : (2-3'): Black (10yr 2/1) SLAG, trace fine to coarse sand, trace(+) Ash, trace Gravel, moist (3-4'): Light brown (10yr 5/4) fine to coarse SAND, little Gravel, little Silt, trace Slag, trace Brick, moderate blue staining, moist | ND | | | | | | | |
| 5 | 3 | 4-6 | 24 | 14 | 7 7 8 10 | 3 : Medium dense, light brown (10yr 5/4) fine to coarse SAND, little Gravel, little Silt, trace Slag, trace Brick, slight blue staining, moist | 3 | 1.1 | | | | | | |
| | 4 | 6-8 | 24 | 15 | 4 3 2 7 | 4 : Loose, gray brown (10yr 4/2) fine to coarse SAND, some Silt, trace(+) Gravel, trace Brick, slight blue staining, wet | | 1.1 | | | | FILL | | |
| 10 | 5 | 8-10 | 24 | 15 | 3 3 2 2 | 5 : Loose, gray brown (10yr 4/2) fine to coarse SAND, some Silt, trace(+) Gravel, trace Brick, wet | | 3.3 | | | | | | |
| | 6 | 10-12 | 24 | 3 | WOH 1 2 | 6 : Very loose, gray brown (10yr 4/2) fine to coarse SAND, some Silt, trace(+) Gravel, wet | | 8.1 | | | | | | |
| 15 | 7 | 12-14 | 24 | 9 | 1 WOH WOH | 7 : (Top 4"): Gray brown (10yr 4/2) fine to coarse SAND, some Silt, trace(+) Gravel, wet (Bot 5"): Dark brown (10yr 3/3) Fibrous PEAT, wet, organic odor | | 4.4 0.9 | | | | 13 | -1.5 | |
| | 8 | 14-16 | 24 | 0 | WOH | 8 : No Recovery (very soft organic soils) | NM | | | | | | | |
| 20 | 9 | 16-18 | 24 | 14 | 2 2 2 2 | 9 : Soft dark brown (10yr 3/2) ORGANIC SILT, trace fine to coarse sand, wet | | 1.4 | | | | ORGANIC SOILS | | |
| | 10 | 18-20 | 24 | 12 | WOH 1 2 | 10 : Very soft dark brown (10yr 3/2) ORGANIC SILT, little fine to coarse sand, wet | | 3.1 | | | | | | |
| 20 | | | | | | End of exploration at 20 feet. | | | | | 20 | -8.5 | | |

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. 2. The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 3 - Water table was observed at 4 feet bgs during drilling. 4. A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 12 feet bgs, 2" Diameter, Schedule 40, flush joint, PVC Riser installed from 0-2 feet bgs. Filter Sand placed in annulus from 1-13 feet bgs. Bentonite Seals installed from 0.5-1 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-403

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-404
 SHEET: 1 of 1
 PROJECT NO: 33554
 REVIEWED BY: MSK

Logged By: SN
 Drilling Co.: Geosearch
 Foreman: Shawn Preston

Type of Rig: Truck Mounted
 Rig Model: CME
 Drilling Method:
 HSA & Soil Vactor

Boring Location: See Plan
 Ground Surface Elev. (ft.): 11.3
 Final Boring Depth (ft.): 20
 Date Start - Finish: 10/30/2015 - 11/2/2015

H. Datum:
 NAD 83
 V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|-------------|------------------------------|-------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 5 | 1 | 0-2 | NA | NA | NA | 1 : 1A (0-1"): Brown (10yr 3/3) fine to coarse SAND, little Silt, trace Gravel, trace Slag, trace Coal, dry | 1 | ND | | | | | | No Equipment Installed |
| | 2 | 2-4 | NA | NA | NA | 1B (1-2): Black (10yr 2/1) Coal, trace fine to coarse SAND, trace Gravel, trace Silt, trace Slag, trace Brick, trace Ash, dry 2 : Brown (10yr 4/4) fine to coarse SAND, little Gravel, trace (+) Silt, trace Coal, trace Slag, trace Ash, trace Brick, moist | 2 | ND | | | | FILL | | |
| 10 | 3 | 4-6 | 24 | 10 | 4 1 3 WOH | 3 : Loose gray (10yr 4/1) fine to medium SAND AND SILT, trace Gravel, wet | 3 | ND | | | 4 | ----- | 7.3 | |
| | 4 | 6-8 | 24 | 12 | 2 3 6 8 | 4 : Loose gray (10yr 4/1) fine to medium SAND AND SILT, trace Gravel, wet | | ND | | | | | | |
| 15 | 5 | 8-10 | 24 | 14 | WOH 3 3 3 | 5 : Loose gray (10yr 4/1) fine to medium SAND AND SILT, trace Gravel, wet | | ND | | | | POSSIBLE FILL/SANDS AND SILT | | |
| | 6 | 10-12 | 24 | 15 | 4 4 3 3 | 6 : Loose gray (10yr 4/1) fine to medium SAND AND SILT, trace Gravel, wet | | ND | | | | | | |
| 20 | 7 | 12-14 | 24 | 16 | 2 9 15 15 | 7 : (Top 10"): Loose gray (10yr 4/1) fine to medium SAND AND SILT, trace Gravel, wet (Bot 6"): Orange brown (10yr 5/6) fine to coarse SAND, little Silt, trace Gravel, wet | | ND | | | 14 | ----- | -2.7 | |
| | 8 | 14-16 | 24 | 6 | WOH 3 4 6 | 8 : Medium stiff gray (10yr 4/1) fine to medium SAND AND SILT, trace Gravel, wet | | ND | | | | | | |
| 25 | 9 | 16-18 | 24 | 18 | 13 11 12 12 | 9 : Very stiff gray (10yr 4/1) fine to medium SAND AND SILT, trace Gravel, wet | | ND | | | | SAND AND SILT | | |
| | 10 | 18-20 | 24 | 16 | 4 4 4 7 | 10 : Medium stiff gray (10yr 4/1) fine to medium SAND AND SILT, trace Gravel, wet | | ND | | | 20 | ----- | -8.7 | |
| | | | | | | End of exploration at 20 feet. | | | | | | | | |

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv.

2 - The upper 5 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

3 - Water table was observed at 5 feet bgs during drilling.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-404

GZA TEMPLATE TEST BORING WIEQUIP NGRIDNE: 11/16/2015; 10:41:02 AM

RECORD OF BOREHOLE B-201 (KW-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/15/16
 DATE COMPLETED: 1/18/16

COORDS: N: 260,792.90 E: 356,903.17
 GS ELEVATION: 11.7 ft
 WEATHER: Cloudy
 TEMPERATURE: 34 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 1.7 ft
 ELEVATION W.L.: 10.0 ft
 DATE W.L.: 1/18/2016
 TIME W.L.: 08:00

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|---------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | 10 | 0.0 - 9.0ft Brown, fine to coarse SAND, some silt, trace gravel (FILL). | SM | | 0.0 | S1 | SS | 12-15-20-15 | 35 | 1.1 2.0 | Top 4": Gray, moist, dense, fine SAND, little silt, (SM). Pp=1536psf Bottom 9": Reddish brown, moist, dense, fine to coarse SAND, little silt, trace gravel, (SM). PID=0.1ppm |
| 5.0 | 5 | | | | 5.0 | S2 | SS | 8-4-6-5 | 10 | 0.8 2.0 | Dark brown, wet, loose, fine to coarse SAND, some silt, trace gravel, (SM). Slight hydrocarbon odor. PID=0.0ppm |
| 9.0 | 10.0 | 9.0 - 19.4ft Dark gray, silty fine to coarse SAND, trace to little gravel. | SM | | 9.0 | S3 | SS | 12-9-11-10 | 20 | 0.3 2.0 | Dark gray, wet, medium dense, fine to coarse SAND, some silt, trace gravel, (SM). Strong hydrocarbon odor and visible sheen. PID=12.0ppm |
| 14.0 | 15.0 | | | | 14.0 | S4 | SS | 10-4-1-1 | 5 | 0.5 2.0 | Gray, wet, loose, silty SAND, trace gravel, (SM). Strong hydrocarbon odor and visible sheen. PID=3.0ppm |
| 16.0 | 5 | | | | 16.0 | S5 | SS | 1-WOH- WOH-WOH | 0 | 1.4 2.0 | Dark gray, wet, very loose, silty medium to coarse SAND, little fine to medium gravel, (SM). Strong hydrocarbon odor and visible sheen. PID=1.5ppm |
| 19.0 | 20.0 | | | | 19.0 | S6 | SS | 9-4-2-2 | 6 | 0.7 2.0 | Top 5": Gray, wet, loose, silty fine to coarse SAND, little gravel, (SM). Strong hydrocarbon odor. Bottom 3": Dark gray to black, loose, organic SILT, (OH). Pp=1000psf, Tv = 100 psf. |
| 21.0 | -10 | | | | 21.0 | S7 | VANE | WOP-WOP- WOP-WOP | 0 | 0.3 2.0 | Dark gray, wet, very loose, organic SILT, some shell fragments, (OH). 0.5" seam of dark gray, silty fine to coarse SAND, some shell fragments, some gravels, (SM), PID=0.4ppm V1: (21.5-22) Su = 133 psf; Remolded Su = 300 psf V2: (22.5-23) Su = 250 psf; Remolded Su = 359 psf |
| 23.0 | | 19.4 - 34.0ft Dark gray, organic SILT to organic silty fine SAND, trace shells. | OH | | 23.0 | S8 | SS | 20-16-10-8 | 26 | 2.0 2.0 | Top 12": Dark gray, wet, medium dense, silty fine SAND, trace shell fragments, (SM). Bottom 12": Dark gray, wet, very stiff, organic SILT, trace shell fragments, (OH). PID=0.1ppm |
| 25.0 | | | | | | | | | | | |

Log continued on next page

- Fill (made ground)
- USCS Silty Sand (SM)
- USCS High Plasticity Organic silt or clay with shells (OHSH)
- USCS Well-graded Sand (SW)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-201 (KW-1)

SHEET 2 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/15/16
 DATE COMPLETED: 1/18/16

COORDS: N: 260,792.90 E: 356,903.17
 GS ELEVATION: 11.7 ft
 WEATHER: Cloudy
 TEMPERATURE: 34 deg F

INCLINATION: 90
 DEPTH W.L.: 1.7 ft
 ELEVATION W.L.: 10.0 ft
 DATE W.L.: 1/18/2016
 TIME W.L.: 08:00

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | -15 | | | OH | 25.0 | S9 | SS | 5-3-4-3 | 7 | 2.0 2.0 | Top 6": Dark gray, wet, loose, silty fine to coarse SAND, trace fine gravel, trace shell fragments, (SM). Bottom 18": Dark gray, wet, medium stiff, organic SILT, trace fine gravel, trace shell fragments, (OH). |
| 29.0 | | | | | 29.0 | S10 | SS | 4-2-12-100/2" | 14 | 0.9 1.7 | Dark gray, wet, medium dense, silty fine to coarse SAND, some shell fragments, trace fine gravel, (SM). PID=0.0ppm |
| 34.0 | | 34.0 - 61.0ft Dark brown, fine to coarse SAND, trace gravel, trace silt, (Outwash). | | SW | 34.0 | S11 | SS | 18-22-20-23 | 42 | 0.9 2.0 | Brown, wet, hard, SILT, little fine sand, trace shells, (ML). 1.5" thick seam of gravel. PID=0.0ppm |
| 39.0 | | | | | 39.0 | S12 | SS | 13-10-24-23 | 34 | 0.8 2.0 | Dark brown, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SW). PID=0.0ppm |
| 44.0 | | | | | 44.0 | S13 | SS | 32-26-20-16 | 46 | 0.6 2.0 | Dark brown, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SP). PID=0.0ppm |
| 49.0 | | | | | 49.0 | | SS | 18-10-12-13 | 22 | 0.0 2.0 | NO RECOVERY. |
| 50.0 | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)
 USCS High Plasticity Organic silt or clay with shells (OHSH)
 USCS Well-graded Sand (SW)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

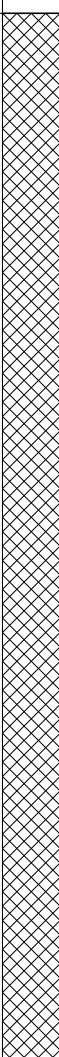
RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area




DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 1 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--|---------------------------|--|------|--|-----------------|--------|----------------|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 10 5.0 10.0 15.0 20.0 25.0 | 10 5 0 -5 -10 | 0.0 - 19.0ft Dark grayish brown, fine to coarse SAND to silty fine to medium SAND, trace to little gravel (FILL). | SP |  | 0.0 | S1 | SS | 10-10-25-21 | 35 | 1.1 2.0 | Top 2": Gray, damp, dense, coarse GRAVEL, some fine sand, (GP). Middle 5": Brown, moist, dense, silty fine to medium SAND, trace asphalt, trace gravel, (SM). Bottom 6": Dark brown, moist, dense, fine to coarse SAND, trace asphalt, trace gravel, (SP) PID=0.1ppm |
| | | | | | 5.0 | S2 | SS | 30-23-23-23 | 46 | 1.0 2.0 | Dark grayish brown, moist, dense, medium to coarse SAND, some gravel, trace concrete (up to 1"), (SP). PID=0.5ppm |
| | | | | | 9.0 | S3 | SS | 41-21-13-9 | 34 | 0.7 2.0 | Dark grayish brown, wet, dense, fine to coarse SAND, little gravel, (SW). Slight hydrocarbon odor. PID=2.3ppm |
| | | | | | 14.0 | S4 | SS | 18-13-13-13 | 26 | 0.9 2.0 | Dark gray, wet medium dense, silty fine to medium SAND, little gravel, (SM). Slight hydrocarbon odor. PID=32.5ppm |
| | | | | | 19.0 | S5 | SS | 1-1-1-1 | 2 | 1.3 2.0 | Dark brown, moist, soft, fine to medium sandy CLAY, (CH). Tv=300, 250, 360psf Pp=2000, 1700, 1500psf |
| | | | | | 21.0 | S6 | VANE | 1-1-1-1 | 2 | 2.0 2.0 | Dark brown, wet, soft, fine to medium sandy CLAY, trace shell fragments, (CH). Tv=250, 200, 200psf Pp=1500, 1000, 1200psf V1: (21.5-22) Su = 550 psf; Remolded Su = 200 psf V2: (22.5-23) Su = 583 psf; Remolded Su = 416 psf |
| | | | | | 23.0 | S7 | SS | 1-1-1-2 | 2 | 2.0 2.0 | Dark brown, wet, soft, fine to medium sandy CLAY, (CH). Tv=250, 200, 200psf Pp=1500, 1700, 2000psf |

Log continued on next page

 Fill (made ground)
  USCS High Plasticity Organic silt or clay with shells (OHS)
  USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 2 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|---|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | -15 | | | OH | | | | | | | |
| 30.0 | -20 | | | | 29.0 | S8 | SS | WOH-2-5-7 | 7 | 2.0 2.0 | Top 14": Dark gray, wet, soft, organic SILT, trace fine sand, (OH). Bottom 10": Dark grayish brown, wet, loose, silty medium to coarse SAND, (SM). Tv=200, 250, 250psf Pp=2000, 1800, 1800psf |
| 35.0 | -25 | | | | 34.0 | S9 | SS | 1-2-1-2 | 3 | 2.0 2.0 | Top 8": Dark gray, wet, soft, organic SILT, trace wood fragments, trace fine sand, trace shell fragments, (OH). Tv=600, 550, 350psf Pp=2500, 2000, 2250psf Bottom 16": Dark gray, wet, soft, sandy SILT, trace wood fragments, trace shell fragments, (ML). |
| 40.0 | -30 | | | | 39.0 | S10 | SS | 3-2-3-3 | 5 | 2.0 2.0 | Dark gray, moist, soft, SILT, trace shell fragments, (ML). Tv=350, 650, 300psf Pp=2000, 1700, 2000psf |
| 45.0 | -35 | | | | 41.0 | S11 | VANE | 4-2-3-3 | 5 | 1.5 2.0 | Dark gray, moist, soft, clayey SILT, trace fine sand, trace shell fragments, (MH). Tv=300, 360, 200psf Pp=1000, 1000, 1000psf PID=0.6ppm V3: (41.5-42) Su = 350 psf; Remolded Su = 183 psf V4: (42.5-43) Su = 200 psf; Remolded Su = 50 psf |
| 50.0 | | | | | 49.0 | S12 | SS | 4-3-3-3 | 6 | 2.0 2.0 | Dark gray, moist, soft, organic SILT, trace wood, trace shell fragments, (OH). Tv=480, 400, 450psf, Pp=2500, 2600, 3000psf PID=0.6ppm |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHSH)
- USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 3 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|---------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | -40 | | | | | S12 | SS | 4-3-3-3 | 6 | 2.0 2.0 | |
| | | | | | 54.0 | S13 | SS | 2-2-2-3 | 4 | 2.0 2.0 | Dark gray, moist, soft, organic SILT, trace wood fragments, trace shell fragments, (OH). Tv=350, 300, 400psf Pp=2500, 2500, 2500psf |
| 55.0 | -45 | | | | 56.0 | S14 | VANE | WOP-WOP- WOP-WOP | 0 | 1.5 2.0 | Dark gray, moist, very soft, organic SILT, trace wood fragments, trace roots, trace shell fragments, (OH). Tv=100, 250, 200psf Pp=2000, 1500, 1000psf V5: (56.5-57) Su = 1801 psf; Remolded Su = 995 psf V6: (57.5-58) Su = 2844 psf; Remolded Su = 1801 psf |
| | | | OH | | 59.0 | S15 | SS | 2-3-4-6 | 7 | 2.0 2.0 | Dark gray, moist, medium stiff, organic SILT, trace wood fragments, trace roots, trace fine sand, (OH). Tv=240, 320, 300psf Pp=2000, 3200, 3500psf |
| 60.0 | -50 | | | | 64.0 | S16 | SS | 7-9-9-9 | 18 | 1.7 2.0 | Top 5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace roots, trace fine sand, (OH). Tv=250, 200, 200psf Pp=2500, 2000, 2000psf Middle 10.5": Dark gray, wet, loose, silty fine to coarse SAND, (SM). Bottom 3.5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace fine sand, (OH). Pp=3000, 2500, 3500psf |
| 65.0 | -55 | | | | 69.0 | S17 | SS | 13-18-17-14 | 35 | 0.7 2.0 | Dark gray, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SP). |
| 70.0 | -60 | 69.0 - 81.0ft Dark gray, fine to coarse SAND to silty fine to medium SAND, trace gravel (outwash). | SP | | 74.0 | | SS | 14-17-14-12 | 31 | 0.0 2.0 | NO RECOVERY. Piece of gravel in tip. |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHS)
 USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 4 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|------------------|--------------------|--------|-------------|----------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | -65 | | | [Dotted Pattern] | | | SS | 14-17-14-12 | 31 | 0.0 2.0 | |
| 80.0 | | | SP | | 79.0 | S18 | SS | 15-12-11-8 | 23 | 1.5 2.0 | Dark gray, wet, medium dense, silty fine to medium SAND, trace gravel, (SM). |

Boring completed at 81.0 ft

- Notes:**
 1. Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL .GPJ GOLDR NH 2011.GDT 5/10/16

| | | |
|--------------------|--|------------------------------|
| Fill (made ground) | USCS High Plasticity Organic silt or clay with shells (OHSH) | USCS Poorly-graded Sand (SP) |
|--------------------|--|------------------------------|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



RECORD OF BOREHOLE B-203 (KW-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

SHEET 1 of 4
 INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|--|-------------|----------------|-------------------|--|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 24.0ft Gray to black, fine to coarse SAND to silty SAND, trace gravel (FILL). | SM | | 0.0 | S1 | SS | 18-18-15-17 | 33 | 1.6 2.0 | Top 10": Grayish light brown, frozen, dense, fine to coarse SAND, trace gravel, trace silt (SW). Bottom 9": Dark brown, moist, dense, fine to medium SAND, little silt, (SM). N value may not be representative of in situ density/ consistency, due to frozen soil. |
| 4.0 | S2 | | | | SS | 24-10-12-11 | 22 | 0.9 2.0 | Top 5.5": Black, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP). Bottom 5": Light gray, moist, medium dense, fine to medium SAND, trace gravel, (SP). | | |
| 9.0 | | | | | | | | | NO RECOVERY. | | |
| 14.0 | S3 | | | | SS | 11-8-6-13 | 14 | 0.0 2.0 | | | |
| 19.0 | S4 | | | | SS | 22-10-6-4 | 16 | 0.8 2.0 | Top 5": Light gray, moist, medium dense, silty fine SAND, trace concrete, trace gravel, (SM). PID=74.6ppm Bottom 5": Dark gray to black, wet, medium dense, fine to coarse SAND, trace gravel, trace silt (SW). Strong hydrocarbon odor and visible sheen. PID=702ppm | | |
| 24.0 | S5 | | | | SS | 11-4-3-3 | 7 | 0.6 2.0 | Black, wet, loose, fine to coarse SAND, some fine gravel, (SW). Strong hydrocarbon odor and visible sheen. PID=78.1ppm | | |
| 24.0 | | | | | | | | | | | |
| 25.0 | | | | | 24.0 - 54.0ft Dark gray, organic SILT, trace fine sand, trace shells. | OH | | 24.0 | | | |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHSH)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-203 (KW-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

SHEET 2 of 4
 INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|---------------------|---|------------|---|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | OH | | S5 | SS | 9-2-2-2 | 4 | 0.7 2.0 | V2: (25.5-26) Su = 1043 psf; Remolded Su = NA | |
| | | | | | 26.0 | S6 | VANE | WOP-WOP- WOP-WOP | | 0 | 1.6 2.0 | Top 9": Dark gray, wet, very soft, organic SILT, little fine to coarse sand, trace gravel, (OH). Bottom 10": Dark gray, moist, very soft, organic SILT, trace fine sand, (OH). |
| | | | | | 29.0 | S7 | SS | 1-1-3-2 | | 4 | 1.6 2.0 | Dark gray, moist, soft, organic SILT, trace fine sand, trace shell fragments, (OH). Tv=300, 300, 250psf Pp=2000, 1500, 1800psf |
| 30.0 | -20 | | | | 31.0 | S8 | VANE | WOP-WOP- WOP-WOP | | 0 | 1.5 2.0 | Dark gray, wet, very soft, organic SILT, trace fine sand, trace shell fragments, (OH). Tv=100, 250, 150psf Pp=2000, 1000, 1500psf V3: (31.5-32) Su = 853 psf; Remolded Su = 758 psf V4: (32.5-33) Su = 1042 psf; Remolded Su = 664 psf |
| | | | | | 34.0 | S9 | SS | 1-2-3-2 | | 5 | 0.5 2.0 | Dark gray, wet, medium stiff, organic SILT, trace fine to medium sand, trace shell fragments, (OH). Pp=1000, 1500, 1000psf |
| 35.0 | -25 | | | | 39.0 | S10 | SS | 1-1-1-2 | | 2 | 0.3 2.0 | Dark gray, wet, soft, organic SILT, some clay, trace fine sand, trace shell fragments, (OH). Pp=1000, 1000, 1000psf |
| | | | | | 44.0 | S11 | SS | 1-2-3-4 | | 5 | 1.4 2.0 | Dark gray, moist, medium stiff, organic SILT, trace fine sand, (OH). Tv=200, 150, 200psf Pp=1500, 1500, 1000psf |
| 45.0 | -35 | | | | 49.0 | S12 | SS | 7-11-11-11 | | 22 | 0.4 2.0 | Black, wet, medium dense, silty fine to medium SAND, some organics (wood fragments, roots), (SM). PID=9.0ppm |
| 50.0 | -40 | | | | | | | | | | | |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-203 (KW-6)

SHEET 3 of 4

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | OH | | | S12 | SS | 7-11-11-11 | 22 | 0.4 2.0 | |
| 55.0 | -45 | 54.0 - 91.0ft Gray, fine to coarse SAND to silty SAND, trace to some gravel, (Outwash). | | | 54.0 | S13 | SS | 22-26-32-40 | 58 | 0.7 2.0 | Top 2.5": Dark gray, wet, very dense, fine to medium SAND, (SP). Middle 2.5": Dark gray, wet, very dense, GRAVEL, trace medium to coarse sand, (GP). Bottom 3": Dark brown, wet, very dense, GRAVEL, trace organics, trace fine to coarse sand, trace silt, (GP). |
| 60.0 | -50 | | | | 59.0 | S14 | SS | 17-9-11-12 | 20 | 0.3 2.0 | Brownish gray, wet, medium dense, fine to coarse SAND, some gravel, some silt, (SM). |
| 65.0 | -55 | | SM | | 64.0 | S15 | SS | 20-8-7-9 | 15 | 0.6 2.0 | Gray, wet, medium dense, fine to coarse SAND, little gravel, trace silt, (SP). |
| 70.0 | -60 | | | | 69.0 | S16 | SS | 14-14-6-4 | 20 | 0.9 2.0 | Dark gray, moist, very stiff, medium to coarse sandy SILT, trace fine gravel, (ML). |
| 75.0 | -65 | | | | 74.0 | S17 | SS | 27-17-17-18 | 34 | 0.8 2.0 | Gray, wet, dense, fine to coarse SAND, little silt, trace gravel, (SM). |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-203 (KW-6)

SHEET 4 of 4

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | | | | [Dotted pattern] | | S17 | SS | 27-17-17-18 | 34 | 0.8 2.0 | |
| 80.0 | -70 | | | | 79.0 | S18 | SS | 38-11-7-7 | 18 | 0.6 2.0 | Gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). Driller noted possible cobbles. |
| 85.0 | -75 | | SM | | | | | | | | |
| 90.0 | -80 | | | | 89.0 | S19 | SS | 15-13-18-28 | 31 | 0.5 2.0 | Gray, wet, medium dense, fine to coarse SAND, some silt, little gravel, (SM). |

Boring completed at 91.0 ft

Notes:

- Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

| | | | |
|--------------------|--|----------------------|--|
| Fill (made ground) | USCS High Plasticity Organic silt or clay with shells (OHSH) | USCS Silty Sand (SM) | |
|--------------------|--|----------------------|--|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



RECORD OF BOREHOLE B-204 (KW-10)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

SHEET 1 of 5
 INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 14.0ft Brown to black, fine to coarse SAND, some to little gravel, some silt (FILL). | | SP | 0.0 | S1 | SS | 15-8-7-6 | 15 | $\frac{1.1}{2.0}$ | Brown, moist (frozen), medium dense, GRAVEL, some fine to coarse sand, some silt, (GM). N value may not be representative of in situ density/ consistency, due to frozen soil. |
| 4.0 | | | | | 4.0 | S2 | SS | 14-5-5-12 | 10 | $\frac{0.4}{2.0}$ | Black, wet, loose, fine to coarse SAND, little gravel, trace asphalt, some silt, (SP). |
| 9.0 | | | | | 9.0 | S3 | SS | 9-8-8-11 | 16 | $\frac{0.9}{2.0}$ | Top 3": Brown, moist, medium dense, silty fine SAND, little gravel, (SM). Bottom 8": Black, wet, medium dense, fine to coarse SAND, some gravel, (SP). Strong hydrocarbon odor and visible sheen. PID=5.4ppm |
| 14.0 | -5 | 14.0 - 55.5ft Dark brown, organic SILT, some to trace fine sand, trace shells, and wood fragments. | | OH | 14.0 | S4 | SS | 5-12-10-9 | 22 | $\frac{1.3}{2.0}$ | Top 4": Brown, wet, very stiff, organic SILT, trace fine sand, (OH). Bottom 11": Brownish gray, moist, fine to medium SAND, little gravel, trace wood fragments, (SP). Strong hydrocarbon odor and visible sheen. PID=12ppm |
| 19.0 | | | | | 19.0 | S5 | VANE | WOH-1-1-1 | 2 | $\frac{0.3}{2.0}$ | Dark gray, wet, soft, organic SILT, little wood fragments, trace fine sand, (OH). Hydrocarbon odor. Tv=150, 200, 200psf Pp=1000, 1000, 1500psf V1: (19.5-20) Su = 711 psf; Remolded Su = 332 psf V2: (20.5-21) Su = 1138 psf; Remolded Su = 948 psf |
| 22.0 | | | | | 22.0 | S6 | SS | WOP-WOP-WOP-WOP | 0 | $\frac{1.5}{2.0}$ | Dark brown, wet, very soft, organic SILT, some fine sand, (OH). Strong "rotting egg" odor. Tv=250, 300, 250psf Pp=1500, 2000, 2000psf |
| 24.0 | | | | | 24.0 | S7 | SS | 4-3-4-4 | 7 | $\frac{2.0}{2.0}$ | Top 12": Dark brown, wet, medium stiff, organic SILT, little gravel, (OH). Bottom 12": Dark brown, moist, medium stiff, organic SILT, trace wood fragments, trace fine sand, (OH). Tv=250, 200, 250psf Pp=2000, 2000, |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHS)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)

SHEET 2 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|-----------------|----|-------------------|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | OH | | S7 | SS | 4-3-4-4 | 7 | $\frac{2.0}{2.0}$ | 2000psf | |
| | | | | | 29.0 | S8 | SS | 1-WOH-1-2 | 1 | $\frac{1.5}{2.0}$ | Dark brown, moist, very soft, organic SILT, trace shell fragments, trace fine sand, (OH). Tv=100, 150, 150psf Pp=1000, 1000, 1000psf | |
| 30.0 | -20 | | | | 31.0 | S9 | VANE | WOP-WOP-WOP-WOP | 0 | $\frac{1.6}{2.0}$ | Dark gray, moist, very soft, organic SILT, some fine sand, trace wood fragments, (OH). Tv=100, 100, 100psf Pp=100, 100, 100psf V3: (31.5-32) Su = 1090 psf; Remolded Su = 568 psf V4: (32.5-33) Su = 1422 psf; Remolded Su = 1327 psf | |
| | | | | | 33.0 | S10 | SS | 2-2-2-2 | 4 | $\frac{1.7}{2.0}$ | Top 8": Dark brown, wet, soft, organic SILT, some fine to coarse sand, trace gravel, trace wood fragments, (OH). Tv= 100, 100, 100psf Pp=100, 100, 100psf Bottom 12": Dark gray, moist, soft, organic SILT, trace gravel, trace fine to medium sand, (OH). Tv=250, 200, 250psf Pp=2000, 2500, 2000psf | |
| 35.0 | -25 | | | | | | | | | | | |
| | | | | | 39.0 | S11 | SS | 7-8-9-10 | 17 | $\frac{1.3}{2.0}$ | Dark gray, moist, medium dense, silty fine to medium SAND, trace gravel, (SM). Hydrocarbon odor and visible sheen. PID=0.5ppm | |
| 40.0 | -30 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 45.0 | -35 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 50.0 | -40 | | | | | | | | | | | |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)

SHEET 3 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | OH | | | | | | | | |
| 55.0 | -45 | 55.5 - 101.0ft Gray, silty fine to coarse SAND, trace to some gravel (outwash). | | | 54.0 | S12 | SS | 8-24-22-21 | 46 | 2.0 2.0 | Top 14": Black, moist, hard, organic SILT, little wood fragments, trace gravel, (OL). Tv=450, 400, 400psf Pp=3000, 3500, 3000psf Middle 4": Dark brownish gray, moist, hard, fine to medium sandy SILT, (ML). Tv=150, 200, 150psf Pp=1000, 1000, 1500psf Bottom 6": Gray, wet, dense, fine to coarse SAND, trace gravel, (SP). |
| 60.0 | -50 | | | | 59.0 | S13 | SS | 8-14-14-13 | 28 | 0.8 2.0 | Gray, wet, medium dense, silty fine to medium SAND, trace gravel, (SM). |
| 65.0 | -55 | | SM | | 64.0 | S14 | SS | 9-14-15-16 | 29 | 1.2 2.0 | Gray, wet, medium dense, silty fine SAND, (SM). |
| 70.0 | -60 | | | | 69.0 | S15 | SS | 12-12-13-13 | 25 | 1.3 2.0 | Gray, wet, medium dense, fine SAND, trace gravel, trace silt, (SP). |
| 75.0 | -65 | | | | 74.0 | S16 | SS | 20-14-13-12 | 27 | 0.5 2.0 | Gray, wet, medium dense, silty fine to coarse SAND, trace gravel, (SM). |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

SHEET 4 of 5
 INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|------------|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | | | | SM | | S16 | SS | 20-14-13-12 | 27 | 0.5 2.0 | |
| | | | | | 79.0 | S17 | SS | 11-16-13-20 | 29 | 0.5 2.0 | Gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). |
| 80.0 | -70 | | | | | | | | | | |
| | | | | | 84.0 | S18 | SS | 50/2" | R | 0.2 0.2 | Dark gray, wet, very dense, GRAVEL, trace fine to coarse sand, (GP). |
| 85.0 | -75 | | | | | | | | | | |
| | | | | | 89.0 | S19 | SS | 19-15-15-13 | 30 | 0.2 2.0 | Gray, wet, very stiff, fine to coarse sandy SILT, little gravel, (ML). |
| 90.0 | -80 | | | | | | | | | | |
| | | | | | | | | | | | |
| 95.0 | -85 | | | | | | | | | | |
| | | | | | | | | | | | |
| 99.0 | -90 | | | | S20 | SS | 6-4-6-10 | 10 | 0.0 2.0 | No recovery; resampled (recovery 0.5'/2.0'). Gray, wet, loose, fine to coarse SAND, some gravel, trace silt, (SP). | |
| 100.0 | -90 | | | | | | | | | | |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)


SHEET 5 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30




| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|-------------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 100.0 | | | SM |  | | S20 | SS | 6-4-6-10 | 10 | <u>0.0</u> 2.0 | |

Boring completed at 101.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDBER NH 2011.GDT 5/10/16

| | | | |
|--|--|--|--|
|  Fill (made ground) |  USCS High Plasticity Organic silt or clay with shells (OHSH) |  USCS Silty Sand (SM) | |
|--|--|--|--|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



RECORD OF BOREHOLE B-205 (PL-5)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Southwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/1/16
 DATE COMPLETED: 2/1/16

COORDS: N: 260,902.81 E: 357,253.32
 GS ELEVATION: 8.5 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 50 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 7.0 ft
 ELEVATION W.L.: 1.5 ft
 DATE W.L.: 2/1/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------|---|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | |
| 0.0 | | 0.0 - 19.0ft Light to dark brown, gravelly fine to coarse SAND to fine to coarse SAND, some gravel, trace to some silt, (FILL). | SM | | 0.0 | S1 | SS | 6-6-13-21 | 19 | 1.3 2.0 | Light brown, dry, medium dense, fine to coarse SAND, some gravel, trace silt, (SW). PID = 0.1 ppm | | |
| 5 | | | | | | | | | | | | | |
| 4.0 | | | | | | | | S2 | SS | 12-16-16-21 | 32 | 1.0 2.0 | Top 4": Brown, moist, dense, fine to coarse SAND, some gravel, trace silt, (SW). Bottom 8": Light brown, moist, dense, fine to medium SAND, some gravel, little silt, (SM). PID = 1.0 ppm 5.0-9.0 ft: Tight material - Difficult to drive casing |
| 7.0 | | | | | | | | | | | | | 7.0 ft: Strong hydrocarbon odor coming from the borehole |
| 9.0 | | | | | | | | S3 | SS | 25-30-28-16 | 58 | 1.3 2.0 | Dark brown, wet, very dense, gravelly fine to coarse SAND, some silt, (SM). Strong hydrocarbon odor. PID = 3.9 ppm |
| 14.0 | | | | | | | | S4 | SS | 15-14-11-10 | 25 | 1.1 2.0 | Dark brown, wet, medium dense, gravelly fine to coarse SAND, some silt, (SM). Slight hydrocarbon odor. PID = 3.7 ppm |
| 19.0 | | 19.0 - 51.0ft Brown, silty fine to coarse SAND to SAND, some to trace gravel, some silt, (Outwash). | SM | | 19.0 | S5 | SS | 9-13-16-21 | 29 | 0.8 2.0 | Light brown, wet, medium dense, gravelly fine to coarse SAND, trace silt, trace clay, (SP-SM). PID = 0.5 ppm (very windy) | | |
| 24.0 | | | | | | | | S6 | SS | 21-19-18-16 | 37 | 1.3 2.0 | Top 5": Dark brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). Bottom 10": Brown, wet, dense, fine to coarse SAND, trace gravel, little |
| 25.0 | | | | | | | | | | | | | |

Log continued on next page

Fill (made ground) USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-205 (PL-5)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Southwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/1/16
 DATE COMPLETED: 2/1/16

COORDS: N: 260,902.81 E: 357,253.32
 GS ELEVATION: 8.5 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 50 deg F

SHEET 2 of 3
 INCLINATION: 90
 DEPTH W.L.: 7.0 ft
 ELEVATION W.L.: 1.5 ft
 DATE W.L.: 2/1/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SM | | S6 | SS | 21-19-18-16 | 37 | $\frac{1.3}{2.0}$ | silt, (SM). PID = 0.4 ppm (very windy) | |
| | | | | | | | | | | | | |
| | -20 | | | | | | | | | | | |
| 29.0 | | | | | | S7 | SS | 6-7-7-7 | 14 | | $\frac{0.8}{2.0}$ | Brown, wet, medium dense, fine to coarse SAND, some gravel, trace silt, trace clay, (SP-SM). PID = 0.5 ppm (windy) |
| | | | | | | | | | | | | |
| | -25 | | | | | | | | | | | |
| 34.0 | | | | | | S8 | SS | 5-6-5-6 | 11 | | $\frac{1.0}{2.0}$ | Brown, wet, medium dense, fine to coarse SAND, some gravel, some silt, trace clay, (SM). PID = 0.6 ppm |
| | | | | | | | | | | | | 36.0 ft: Driller adds drilling mud to maintain open hole |
| | -30 | | | | | | | | | | | |
| 39.0 | | | | | | S9 | SS | 15-24-16-12 | 40 | | $\frac{0.6}{2.0}$ | Brown, wet, dense, fine to coarse SAND, little gravel, little silt, little clay, (SM). Occasional 1/8" thick lenses of silt. PID = 0.7 ppm |
| | | | | | | | | | | | | |
| | -35 | | | | | | | | | | | |
| 44.0 | | | | | S10 | SS | 10-8-12-16 | 20 | | $\frac{1.1}{2.0}$ | Brown, wet, medium dense, silty fine to coarse SAND, little gravel, (SM). Alternating layers of sandy silt (3-4") and silty fine to coarse sand (2-3"). Gravel lense at 44'8". PID = 0.0 ppm | |
| | | | | | | | | | | | | |
| | -40 | | | | | | | | | | | |
| 49.0 | | | | | S11 | SS | 15-10-11-12 | 21 | | $\frac{1.3}{2.0}$ | Top 12": Brown, wet, medium dense, silty fine to medium SAND, trace gravel, trace clay, (SM). Bottom 4": Brown, wet, medium dense, fine sandy SILT, trace clay, (ML). | |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-205 (PL-5)


SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Southwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/1/16
 DATE COMPLETED: 2/1/16

COORDS: N: 260,902.81 E: 357,253.32
 GS ELEVATION: 8.5 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 50 deg F

INCLINATION: 90
 DEPTH W.L.: 7.0 ft
 ELEVATION W.L.: 1.5 ft
 DATE W.L.: 2/1/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|-----------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | SM |  | | S11 | SS | 15-10-11-12 | 21 | $\frac{13}{20}$ | PID = 0.0 ppm |

Boring completed at 51.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 24.5' away from the borehole. No vibrations detected.
3. 4" casing to 24' bgs - open hole below



Fill (made ground)



USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-206 (PL-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/2/16

COORDS: N: 260,990.68 E: 357,174.84
 GS ELEVATION: 9.3 ft
 WEATHER: Clear
 TEMPERATURE: 44 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 7.6 ft
 ELEVATION W.L.: 1.7 ft
 DATE W.L.: 2/2/2016
 TIME W.L.: 1150

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|------------|---|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 19.0ft Brown to black, fine to coarse SAND, some gravel, some to little silt, (FILL). | | | 0.0 | S1 | SS | 8-13-16-21 | 29 | 1.3 2.0 | Dark brown, damp, medium dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.1 ppm |
| 5 | 4.0 | | | | S2 | SS | 19-21-26-24 | 47 | 1.3 2.0 | Brown, damp, dense, fine to coarse SAND, little gravel, little silt, (SM). PID = 0.6 ppm | |
| 10.0 | 9.0 | | | | S3 | SS | 25-29-32-36 | 61 | 1.5 2.0 | Brown to black, wet, very dense, medium to coarse SAND, some gravel, some silt, (SM). Strong hydrocarbon odor and visible sheen @ 10'1" bgs. PID = 11.2 ppm 10.0 ft: Driller notes hydrocarbon odor - PID = 0.3 ppm in work area | |
| 15.0 | 14.0 | | | | S4 | SS | 16-11-16-19 | 27 | 1.4 2.0 | Dark brown to black, wet, fine to coarse SAND, some gravel, some silt, trace organics, (SM). Strong hydrocarbon odor and visible sheen. PID = 2.7 ppm | |
| 20.0 | 19.0 | | | | S5 | SS | 1-1-1-7 | 2 | 0.3 2.0 | Dark brown, wet, very loose, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.5 ppm | |
| 25.0 | | 19.0 - 51.0ft Brown, fine to coarse SAND, some to trace gravel, some to little silt, (Outwash). | SM | | 24.0 | S6 | SS | 25-24-19-14 | 43 | 1.2 2.0 | Light Brown, wet, dense, fine to coarse SAND, little gravel, little silt, (SM). Occasional dark brown layers up to 0.5" thick of silty fine sand. PID = 0.5 ppm |

Log continued on next page

Fill (made ground) USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-206 (PL-6)

SHEET 2 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/2/16

COORDS: N: 260,990.68 E: 357,174.84
 GS ELEVATION: 9.3 ft
 WEATHER: Clear
 TEMPERATURE: 44 deg F

INCLINATION: 90
 DEPTH W.L.: 7.6 ft
 ELEVATION W.L.: 1.7 ft
 DATE W.L.: 2/2/2016
 TIME W.L.: 1150

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|----------------|-------------|------------|--|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SM | | S6 | SS | 25-24-19-14 | 43 | 1.2 2.0 | | |
| | | | | | | | | | | | | 26.0 ft: Driller adds drilling mud to the water |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 29.0 | | | | | | | S7 | SS | 16-16-15-10 | 31 | 0.3 2.0 | Brown, wet, dense, gravelly fine to coarse SAND, little silt, trace clay, (SM). PID = 0.0 ppm |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 34.0 | | | | | | | S8 | SS | 8-6-7-8 | 13 | 1.3 2.0 | Brown, wet, medium dense, fine to coarse SAND, some silt, trace gravel, trace clay, (SM). |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 39.0 | | | | | | S9 | SS | 9-11-11-12 | 22 | 1.3 2.0 | Top 6": Brown to dark brown, wet, medium dense, fine to coarse SAND, some silt, trace gravel, trace clay, (SM). Bottom 8": Brown, wet, medium dense, fine sandy SILT, trace gravel, (ML). | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 44.0 | | | | | | S10 | SS | 16-34-25-17 | 59 | 0.8 2.0 | Brown, wet, very dense, gravelly fine to coarse SAND, some silt, trace clay, (SM). 2.5" piece of gravel at 44'5". | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 49.0 | | | | | | S11 | SS | 10-13-15-13 | 28 | 1.2 2.0 | Brown, wet, medium dense, fine to coarse SAND, some gravel, little silt, trace clay, (ML). 2" thick layer of fine to medium sand at 49'6" | |
| | | | | | | | | | | | | |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-206 (PL-6)


SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/2/16

COORDS: N: 260,990.68 E: 357,174.84
 GS ELEVATION: 9.3 ft
 WEATHER: Clear
 TEMPERATURE: 44 deg F

INCLINATION: 90
 DEPTH W.L.: 7.6 ft
 ELEVATION W.L.: 1.7 ft
 DATE W.L.: 2/2/2016
 TIME W.L.: 1150

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|------------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | SM |  | | S11 | SS | 10-13-15-13 | 28 | $\frac{12}{2.0}$ | |

Boring completed at 51.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 28.5' away from the borehole. No vibrations detected.
3. 4" casing to 24' bgs - open hole below



Fill (made ground)



USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-207 (PL-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Northwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/10/16

COORDS: N: 261,112.89 E: 357,202.91
 GS ELEVATION: 9.9 ft
 WEATHER: Clear
 TEMPERATURE: 45 deg F

SHEET 1 of 4
 INCLINATION: 90
 DEPTH W.L.: 6.8 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/10/2016
 TIME W.L.: 0950

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----------|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 19.0ft Brown, gravelly fine to coarse SAND, little silt, (FILL). | | SM | 0.0 | S1 | SS | 14-16-15-15 | 31 | 1.3 2.0 | Brown, damp, dense, gravelly fine to coarse SAND, some silt, (SM). From 6" - 9" color changes to pale brown. PID = 0.6 ppm |
| 5.0 | 5 | | | | 4.0 | S2 | SS | 18-18-14-12 | 32 | 1.2 2.0 | Brown, damp, dense, fine to coarse SAND, little gravel, little silt, (SM). PID = 0.6 ppm |
| 10.0 | 0 | | | | 9.0 | S3 | SS | 19-17-26-24 | 43 | 1.7 2.0 | Black, wet, dense, gravelly fine to coarse SAND, little silt, (SM). Strong hydrocarbon odor and visible sheen. PID = 17.1 ppm |
| 15.0 | -5 | | | | 14.0 | S4 | SS | 8-2-6-6 | 8 | 0.6 2.0 | Black, wet, loose, gravelly medium to coarse SAND, little silt, (SM). Hydrocarbon odor. PID = 3.1 ppm |
| 20.0 | -10 | 19.0 - 34.0ft Dark gray, gravelly fine to coarse SAND, some to little silt, (Outwash). | | | SM | 19.0 | S5 | SS | 8-9-10-9 | 19 | 0.4 2.0 |
| 25.0 | -15 | | | 24.0 | | S6 | SS | 7-8-7-9 | 15 | 1.0 2.0 | Dark gray, wet, medium dense, gravelly fine to coarse SAND, trace clay, (SW). Hydrocarbon odor and visible sheen. PID = 11.0 ppm |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)
 USCS Silty Gravel

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-207 (PL-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Northwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/10/16

COORDS: N: 261,112.89 E: 357,202.91
 GS ELEVATION: 9.9 ft
 WEATHER: Clear
 TEMPERATURE: 45 deg F

SHEET 2 of 4
 INCLINATION: 90
 DEPTH W.L.: 6.8 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/10/2016
 TIME W.L.: 0950

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|---------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | | | SM | | | S6 | SS | 7-8-7-9 | 15 | 1.0 2.0 | |
| | | | | | 29.0 | S7 | SS | 18-39-25-13 | 64 | 1.0 2.0 | Gray to dark gray, wet, very dense, gravelly fine to medium SAND, little silt, (SM). Gravels appear weathered and are up to 3" long. Slight hydrocarbon odor and visible sheen. PID = 0.8 ppm |
| 34.0 - 59.0ft | | Grayish brown, fine to coarse sandy GRAVEL, some silt, (Outwash). | GM | | 34.0 | S8 | SS | 17-18-25-28 | 43 | 1.5 2.0 | Grayish brown, wet, dense, fine to coarse sandy GRAVEL, some fine to coarse sand, trace silt, (GP-GM). |
| | | | | | 39.0 | S9 | SS | 15-16-14-23 | 30 | 0.6 2.0 | Grayish brown, wet, dense, fine to coarse sandy GRAVEL, some silt, (GM). PID = 6.0 ppm |
| | | | | | 44.0 | S10 | SS | 23-19-15-18 | 34 | 1.0 2.0 | Grayish brown, wet, dense, fine to coarse sandy GRAVEL, some silt, (GM). Visible sheen. PID = 0.3 ppm (very windy) |
| | | | | | 49.0 | S11 | SS | 15-24-21-17 | 45 | 1.0 2.0 | Grayish brown, wet, dense, fine to coarse sand GRAVEL, some silt, (GM). 1" thick layer of silty fine to coarse silty sand at 49'3". Visible sheen. PID = 2.3 ppm |
| | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)
 USCS Silty Gravel

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-207 (PL-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Northwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/10/16

COORDS: N: 261,112.89 E: 357,202.91
 GS ELEVATION: 9.9 ft
 WEATHER: Clear
 TEMPERATURE: 45 deg F

SHEET 3 of 4
 INCLINATION: 90
 DEPTH W.L.: 6.8 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/10/2016
 TIME W.L.: 0950

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|------------|---|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 50.0 | | | | GM | | S11 | SS | 15-24-21-17 | 45 | 1.0 2.0 | | |
| | | | | | 54.0 | | | | | | | NO RECOVERY. Driller noted very gravelly material. |
| 55.0 | -45 | | | | | S12 | SS | 18-24-21-17 | 45 | 0.0 2.0 | | |
| | | 59.0 - 91.0ft Dark gray, fine to coarse SAND, some silt, trace to some gravel, (Outwash). | | SM | 59.0 | S13 | SS | 16-28-20-18 | 48 | 1.4 2.0 | Dark grayish brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). From 59'5" to 59'7" layer of brown silty fine sand. | |
| 60.0 | -50 | | | | | | | | | | | |
| | | | | | 64.0 | S14 | SS | 12-12-16-14 | 28 | 1.5 2.0 | Gray, wet, very stiff, SILT, some fine sand, (ML). | |
| 65.0 | -55 | | | | | | | | | | | |
| | | | | | 69.0 | S15 | SS | 14-17-22-22 | 39 | 1.5 2.0 | Dark gray, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). | |
| 70.0 | -60 | | | | | | | | | | | |
| | | | | 74.0 | S16 | SS | 7-6-9-10 | 15 | 1.0 2.0 | Top 10": Grayish brown, wet, dense, fine to medium SAND, some silt, trace gravel, (SM). Some gravel top 2". Bottom 2": Grayish brown, wet, dense, fine sandy SILT, (ML). | | |
| 75.0 | -65 | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)
 USCS Silty Gravel

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-207 (PL-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Northwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/10/16

COORDS: N: 261,112.89 E: 357,202.91
 GS ELEVATION: 9.9 ft
 WEATHER: Clear
 TEMPERATURE: 45 deg F

SHEET 4 of 4
 INCLINATION: 90
 DEPTH W.L.: 6.8 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/10/2016
 TIME W.L.: 0950

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|-------------|-------------------|---|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 75.0 | | | | SM | | S16 | SS | 7-6-9-10 | 15 | $\frac{1.0}{2.0}$ | | |
| | | | | | | | | | | | | |
| 80.0 | -70 | | | | | | S17 | SS | 27-20-22-21 | 42 | $\frac{1.3}{2.0}$ | Dark Gray, wet, dense, fine to coarse SAND, little gravel, trace silt, (SP-SM). |
| | | | | | | | | | | | | |
| 85.0 | -75 | | | | | | S18 | SS | 56-65-70-55 | 135 | $\frac{1.8}{2.0}$ | Top 15": Dark gray, wet, very dense, medium to coarse SAND, some silt, little gravel, (SM). Bottom 7": Dark gray, wet, very dense, SILT, some fine to medium sand, trace gravel, (ML). |
| | | | | | | | | | | | | |
| 90.0 | -80 | | | | | S19 | SS | 15-17-17-17 | 34 | $\frac{0.9}{2.0}$ | Dark gray, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP). 90.0 ft: Drillers could not advance the 3" casing past 90' bgs. Bottom heaving 10' into casing while tripping the drill rods out. | |

Boring completed at 91.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 38' away from the borehole. No vibrations detected.
3. 4" casing to 50' bgs - 3" casing to 90' bgs

Fill (made ground)
 USCS Silty Sand (SM)
 USCS Silty Gravel

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-208 (PL-2)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: North Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/10/16
 DATE COMPLETED: 2/11/16

COORDS: N: 261,138.04 E: 357,316.47
 GS ELEVATION: 9.6 ft
 WEATHER: Snow Flurries
 TEMPERATURE: 25 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 6.5 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/11/2016
 TIME W.L.: 1015

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 19.8ft Brown to black, fine to coarse SAND, some gravel, some silt, (FILL). | | SM | 0.0 | S1 | SS | 4-8-10-11 | 18 | 1.2 2.0 | Brown, damp, medium dense, fine to coarse SAND, little silt, trace gravel, (SM). PID = 0.3 ppm |
| 4.0 | | | | | 4.0 | S2 | SS | 14-32-34-34 | 66 | 1.2 2.0 | Brown, damp, very dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.2 ppm |
| 9.0 | | | | | 9.0 | S3 | SS | 16-22-28-31 | 50 | 1.5 2.0 | Black, wet, very dense, fine to medium SAND, some gravel, some silt, (SM). Strong hydrocarbon odor. PID = 40.1 ppm |
| 14.0 | | | | | 14.0 | S4 | SS | 17-14-11-14 | 25 | 1.4 2.0 | Black, wet, medium dense, fine to coarse SAND, some gravel, some silt, (SM). Hydrocarbon odor and visible sheen. PID = 7.8 ppm |
| 19.0 | | | | | 19.0 | S5 | SS | 9-6-9-28 | 15 | 1.1 2.0 | Top 10": Brown, wet, medium dense, fine to coarse sandy GRAVEL, little silt, some oxidation, (GM). Bottom 3": Dark grayish brown, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). PID = 2.3 ppm |
| 24.0 | | 19.8 - 56.0ft Grayish brown, fine to coarse SAND, little to trace gravel, some to trace silt, (Outwash). | | SM | 24.0 | S6 | SS | 5-5-5-6 | 10 | 1.4 2.0 | Grayish brown, wet, medium dense, fine to medium SAND, little silt, trace gravel, (SM). |

Log continued on next page

Fill (made ground)

 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-208 (PL-2)

SHEET 2 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: North Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/10/16
 DATE COMPLETED: 2/11/16

COORDS: N: 261,138.04 E: 357,316.47
 GS ELEVATION: 9.6 ft
 WEATHER: Snow Flurries
 TEMPERATURE: 25 deg F

INCLINATION: 90
 DEPTH W.L.: 6.5 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/11/2016
 TIME W.L.: 1015

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | | | | | | S6 | SS | 5-5-5-6 | 10 | 1.4 2.0 | |
| | | | | | | | | | | | |
| | -20 | | | | 29.0 | S7 | SS | 4-5-5-6 | 10 | 1.3 2.0 | Grayish brown, wet, loose, silty fine to coarse SAND, trace gravel, (SM). |
| 30.0 | | | | | | | | | | | |
| | | | | | 34.0 | S8 | SS | 6-5-6-5 | 11 | 1.4 2.0 | Grayish brown, wet, medium dense, fine to medium SAND, little silt, (SM). At 35' bgs the color changes to brown. |
| 35.0 | -25 | | | | | | | | | | |
| | | | SM | | 39.0 | S9 | SS | 4-5-7-7 | 12 | 1.3 2.0 | Grayish brown, wet, medium dense, fine to medium SAND, some silt, trace gravel, (SM). |
| 40.0 | -30 | | | | | | | | | | |
| | | | | | 44.0 | S10 | SS | 4-6-7-10 | 13 | 1.0 2.0 | Grayish brown, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP-SM). |
| 45.0 | -35 | | | | | | | | | | |
| | | | | | 49.0 | S11 | SS | 6-9-11-12 | 20 | 1.0 2.0 | Brown, wet, medium dense, fine to medium SAND, some silt, (SM). |
| 50.0 | -40 | | | | | | | | | | |

Log continued on next page

Fill (made ground)

 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOIL/RX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-208 (PL-2)

SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: North Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/10/16
 DATE COMPLETED: 2/11/16

COORDS: N: 261,138.04 E: 357,316.47
 GS ELEVATION: 9.6 ft
 WEATHER: Snow Flurries
 TEMPERATURE: 25 deg F

INCLINATION: 90
 DEPTH W.L.: 6.5 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/11/2016
 TIME W.L.: 1015

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | -45 | | SM | [Symbol] | | S11 | SS | 6-9-11-12 | 20 | 1.0 2.0 | |
| 55.0 | | | | | 54.0 | S12 | SS | 8-10-10-9 | 20 | 1.3 2.0 | Brown, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP-SM). At 54'8" reddish brown oxidation. |

Boring completed at 56.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 28.5' away from the borehole. No vibrations detected.
3. 4" casing to 30' bgs - open hole below

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-209 (PL-3)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: East Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/16/16
 DATE COMPLETED: 2/16/16

COORDS: N: 261,036.03 E: 357,416.79
 GS ELEVATION: 8.8 ft
 WEATHER: Cloudy
 TEMPERATURE: 45 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 6.0 ft
 ELEVATION W.L.: 2.8 ft
 DATE W.L.: 2/16/2016
 TIME W.L.: 1440

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 19.0ft Brown to dark gray, fine to coarse SAND, some gravel, little silt, transitioning to silty GRAVEL, some fine to coarse sand, (FILL). | SM | | 0.0 | S1 | SS | 38-34-18-20 | 52 | 1.3 2.0 | Brown, moist, very dense, fine to coarse SAND, little gravel, little silt, (SM). PID = 0.2 ppm |
| 5 | | | | | 4.0 | S2 | SS | 14-16-17-17 | 33 | 1.3 2.0 | Brown, wet, dense, fine to coarse SAND, little gravel, little silt, (SM). PID = 2.8 ppm 5" - 10": fine to medium SAND |
| 10.0 | | | | | 9.0 | S3 | SS | 21-30-31-26 | 61 | 1.5 2.0 | Dark gray, wet, very dense, silty GRAVEL, some fine to coarse sand, (GM). Strong hydrocarbon odor. PID = 13.1 ppm |
| 15.0 | | | | | 14.0 | S4 | SS | 12-10-9-12 | 19 | 1.2 2.0 | Top 10": Dark gray, wet, medium dense, silty GRAVEL, some fine to coarse sand, (GM). Bottom 4": Brown, wet, medium dense, fine to coarse SAND, trace gravel, trace silt, (SP). Strong hydrocarbon odor. PID = 14.0 ppm |
| 20.0 | | | | | 19.0 | S5 | SS | 9-3-2-6 | 5 | 0.4 2.0 | Dark grayish brown to brown, wet, loose, gravelly fine to coarse SAND, little silt, (SM). PID = 2.8 |
| 25.0 | | 19.0 - 56.0ft Brown, fine to coarse SAND, some to trace gravel, some to trace silt, (Outwash). | SM | | 24.0 | S6 | SS | 9-5-4-6 | 9 | 1.0 2.0 | Pale brown, wet, loose, fine to medium SAND, trace gravel, trace silt, (SP). PID = 0.0 ppm |

Log continued on next page

Fill (made ground) USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-209 (PL-3)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: East Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/16/16
 DATE COMPLETED: 2/16/16

COORDS: N: 261,036.03 E: 357,416.79
 GS ELEVATION: 8.8 ft
 WEATHER: Cloudy
 TEMPERATURE: 45 deg F

SHEET 2 of 3
 INCLINATION: 90
 DEPTH W.L.: 6.0 ft
 ELEVATION W.L.: 2.8 ft
 DATE W.L.: 2/16/2016
 TIME W.L.: 1440

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|-------------|------------|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SM | | S6 | SS | 9-5-4-6 | 9 | 1.0 2.0 | | |
| | | | | | | | | | | | | |
| | -20 | | | | | 29.0 | S7 | SS | 11-7-14-17 | 21 | 1.2 2.0 | Dark grayish brown, wet, medium dense, gravelly fine to medium SAND, little silt, (SP-SM). At 29'10" the color changes to brown. PID = 0.0 ppm |
| 30.0 | | | | | | | | | | | | 32.0 ft: Driller adds drilling mud to maintain open hole |
| | -25 | | | | | | | | | | | |
| | | | | | | 34.0 | S8 | SS | 9-8-8-10 | 16 | 1.1 2.0 | Brown, wet, medium dense, fine to coarse SAND, little silt, trace gravel, (SM). PID = 0.0 ppm |
| 35.0 | | | | | | | | | | | | |
| | -30 | | | | | | | | | | | |
| | | | | | | 39.0 | S9 | SS | 14-11-13-14 | 24 | 1.0 2.0 | Brown, wet, medium dense, fine to medium SAND, some silt, trace gravel, (SM). PID = 0.0 ppm |
| 40.0 | | | | | | | | | | | | |
| | -35 | | | | | | | | | | | |
| | | | | | 44.0 | S10 | SS | 12-12-14-13 | 26 | 1.1 2.0 | Brown, wet, medium dense, fine to coarse SAND, little gravel, trace silt, (SP-SM). PID = 0.0 ppm | |
| 45.0 | | | | | | | | | | | | |
| | -40 | | | | | | | | | | | |
| | | | | | 49.0 | S11 | SS | 15-15-38-20 | 53 | 0.9 2.0 | Brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.0 ppm | |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)

 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-209 (PL-3)

SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: East Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/16/16
 DATE COMPLETED: 2/16/16

COORDS: N: 261,036.03 E: 357,416.79
 GS ELEVATION: 8.8 ft
 WEATHER: Cloudy
 TEMPERATURE: 45 deg F

INCLINATION: 90
 DEPTH W.L.: 6.0 ft
 ELEVATION W.L.: 2.8 ft
 DATE W.L.: 2/16/2016
 TIME W.L.: 1440

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|----------------|----|-------------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | | | | S11 | SS | 15-15-38-20 | 53 | $\frac{0.9}{2.0}$ | |
| -45 | | | SM | | | | | | | | |
| 55.0 | | | | | 54.0 | S12 | SS | 29-27-23-21 | 50 | $\frac{1.0}{2.0}$ | Brown, wet, very dense, GRAVEL, some fine to coarse sand, trace silt, (GW-GM). PID = 0.0 ppm |

Boring completed at 56.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 28' away from the borehole. No vibrations detected.
3. 4" casing to 30' bgs - open hole below
4. The borehole collapsed to 30' bgs after taking sample S12



Fill (made ground)



USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-210 (PL-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

SHEET 1 of 5
 INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 19.0ft Brown to black, fine to coarse SAND, some gravel to fine to coarse sandy GRAVEL, some to little silt, (FILL). | SM | | 0.0 | S1 | SS | 2-12-16-15 | 28 | 1.3 2.0 | Brown, damp, medium dense, fine to coarse SAND, some gravel, little silt, (SM). PID = 0.0 ppm |
| 5.0 | | | | | 4.0 | S2 | SS | 12-8-9-10 | 17 | 1.2 2.0 | Black, wet, medium dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 6.2 ppm |
| 10.0 | | | | | 9.0 | S3 | SS | 10-15-17-25 | 32 | 1.3 2.0 | Black, wet, dense, fine to coarse sandy GRAVEL, little silt, (GM). Strong hydrocarbon odor. PID = 31.6 ppm |
| 15.0 | | | | | 14.0 | S4 | SS | 18-38-16-17 | 54 | 1.5 2.0 | Dark gray, wet, very dense, fine to coarse sandy GRAVEL, some silt, (GM). Strong hydrocarbon odor. PID = 41.3 ppm |
| 20.0 | | 19.0 - 49.6ft Brown, sandy GRAVEL, some to trace silt, (Outwash). | GM | | 19.0 | S5 | SS | 7-11-15-16 | 26 | 1.1 2.0 | Dark gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). Strong hydrocarbon odor. PID = 16.2 ppm |
| 25.0 | | | | | 24.0 | S6 | SS | 10-10-7-8 | 17 | 0.0 2.0 | NO RECOVERY. |

Log continued on next page

Fill (made ground)
 USCS Silty Gravel
 USCS Silt (ML)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-210 (PL-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

SHEET 2 of 5
 INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|---|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | GM | | S6 | SS | 10-10-7-8 | 17 | $\frac{0.0}{2.0}$ | 25.0 ft: Driller notes gravels while washing out the casing | |
| | | | | | 29.0 | S7 | SS | 7-5-10-10 | 15 | $\frac{0.4}{2.0}$ | Grayish brown, wet, medium dense, fine to coarse sandy GRAVEL, some silt, (GM). Strong hydrocarbon odor. PID = 33.3 ppm | |
| | | | | | 34.0 | S8 | SS | 17-19-15-17 | 34 | $\frac{0.7}{2.0}$ | Brown, wet, dense, fine to coarse sandy GRAVEL, some silt, (GM). Strong hydrocarbon odor. PID = 25.8 ppm | |
| | | | | | 39.0 | S9 | SS | 15-15-20-17 | 35 | $\frac{1.4}{2.0}$ | Brown, wet, dense, GRAVEL, some fine to coarse sand, trace silt, (GW-GM). PID = 3.2 ppm | |
| | | | | | 44.0 | S10 | SS | 19-15-17-16 | 32 | $\frac{1.2}{2.0}$ | Brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.2 ppm | |
| | | | | | 49.0 | S11 | SS | 21-13-12-11 | 25 | $\frac{1.0}{2.0}$ | Top 7": Brown, wet, medium dense, fine to coarse sandy GRAVEL, little silt, (GM). Bottom 5": Brown, moist, very stiff, SILT, little fine sand, (ML). PID = 0.3 | |
| 50.0 | | | ML | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Gravel
 USCS Silt (ML)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-210 (PL-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

SHEET 3 of 5
 INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|--|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | |
| 50.0 | | 49.6 - 74.0ft Gray, SILT, trace fine sand, trace clay, (Outwash). | ML | | | S11 | SS | 21-13-12-11 | 25 | 1.0 2.0 | ppm | | |
| | -45 | | | | | | | | | | | | |
| 55.0 | | | | | | | | | | | | | |
| | -50 | | | | | | | | | | | | |
| | -55 | | | | | | | | | | | | |
| | -60 | | | | | | | | | | | | |
| | -65 | | | | | | | | | | | | |
| 75.0 | | | | | | | | | | | | | |
| | | | SM | | 74.0 | S16 | SS | 14-14-13-13 | 27 | 1.3 2.0 | Grayish brown, wet, medium dense, fine sandy SILT, (ML). PID = 0.0 ppm | | |

Log continued on next page

Fill (made ground)
 USCS Silty Gravel
 USCS Silt (ML)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-210 (PL-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

SHEET 4 of 5
 INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|-----|------------|--|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | | |
| 75.0 | | 74.0 - 101.0ft Gray to grayish brown, silty fine to coarse SAND to fine coarse SAND, little silt, trace to some gravel. (Outwash). | SM | | | S16 | SS | 14-14-13-13 | 27 | 1.3 2.0 | | | | |
| -70 | | | | | | | | | | | | | | |
| 80.0 | | | | | | | | | S17 | SS | 9-11-11-14 | 22 | 0.9 2.0 | Brown, wet, medium dense, fine to coarse SAND, little silt, trace gravel, (SM). Gravel lense at 6". PID = 0.0 ppm |
| -75 | | | | | | | | | | | | | | |
| 85.0 | | | | | | | | | S18 | SS | 24-15-13-17 | 28 | 0.7 2.0 | Grayish brown, wet, medium dense, medium to coarse sandy GRAVEL, little silt, (GM). PID = 0.3 ppm |
| -80 | | | | | | | | | | | | | | |
| 90.0 | | | | | | | | | S19 | SS | 21-11-11-11 | 22 | 0.5 2.0 | Gray, wet, medium dense, silty fine to coarse SAND, little gravel, (SM). PID = 0.6 ppm |
| -85 | | | | | | | | | | | | | | |
| 95.0 | | | | | | | | | S20 | SS | 19-17-13-10 | 30 | 0.2 2.0 | Gray, wet, dense, silty fine to coarse SAND, some gravel, (SM). 1" piece of gravel at 1" blocking the split spoon. PID = 1.1 ppm |
| -90 | | | | | | | | | | | | | | |
| 100.0 | | | | | | S21 | SS | 9-7-8-10 | 15 | 0.8 2.0 | Grayish brown, wet, medium dense, fine to coarse SAND, some gravel, trace silt, (SP-SM). PID = 0.0 ppm | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Gravel
 USCS Silt (ML)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-210 (PL-4)


SHEET 5 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|-------------|----------------|----|-------------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 100.0 | | | SM |  | | S21 | SS | 9-7-8-10 | 15 | $\frac{0.8}{2.0}$ | |

Boring completed at 101.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 42' away from the borehole. No vibrations detected.
3. 4" casing to 40' bgs - 3" casing to 95' bgs - open hole below

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDBER NH 2011.GDT 5/10/16

 Fill (made ground)
  USCS Silty Gravel
  USCS Silt (ML)
  USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-211 (CHI-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Next to Cement Plant

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/24/16
 DATE COMPLETED: 2/24/16

COORDS: N: 260,581.01 E: 357,470.96
 GS ELEVATION: 12.9 ft
 WEATHER: Rain
 TEMPERATURE: 46 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 11.1 ft
 ELEVATION W.L.: 1.8 ft
 DATE W.L.: 2/24/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 19.0ft Grayish brown to brown, fine to coarse SAND, some to trace gravel, some to little silt, (FILL). | SM | | 0.0 | S1 | SS | 6-10-11-6 | 21 | 0.7 2.0 | Grayish brown, moist to wet, medium dense, fine to coarse SAND, little gravel, some silt, (SM). PID = 0.7 ppm |
| 10 | | | | | 4.0 | S2 | SS | 6-7-2-1 | 9 | 0.5 2.0 | Grayish brown, wet to saturated, loose, fine to coarse sandy GRAVEL, little silt, trace brick fragments, (GM). PID = 0.0 ppm 5.0 ft: Some difficulty advancing casing to 5' bgs |
| 5 | | | | | 9.0 | S3 | SS | 50/5" | R | 0.4 2.0 | Brown and dark gray with trace oxidized spotting, saturated from 0" - 4.5", dry from 4.5" - 5", very dense, silty fine to coarse SAND, trace gravel, (SM). From 3.5" - 4.5": wood. From 4.5" - 5": concrete. PID = 0.0 ppm 9.4-11.0 ft: Concrete |
| 10.0 | | | | | | | | | | | 12.0 ft: Drill rig chatter to 14' bgs |
| 15.0 | | | | | 14.0 | S4 | SS | 12-11-19-30 | 30 | 1.1 2.0 | Top 5.5": Grayish brown, wet, medium dense, fine to coarse SAND, little silt, (SP). Most likely wash. Bottom 7.5": Reddish brown, wet, medium dense, fine to coarse SAND, some gravel, (SP). From 5.5" - 8": weathered/fractured gravel. PID = 17.3 ppm (rig exhaust) |
| 20.0 | | 19.0 - 51.0ft Brown to gray, fine to coarse SAND, some to trace silt, trace gravel, (Outwash). | SM | | 19.0 | S5 | SS | 9-10-11-11 | 21 | 1.5 2.0 | Brown, wet to saturated, medium dense, fine to coarse SAND, (SP). PID = 0.0 ppm |
| 25.0 | | | | | 24.0 | S6 | SS | 22-20-21-20 | 41 | 0.8 2.0 | Brown, wet, dense, fine to coarse SAND, some gravel, some silt, trace clay, (SM). Some of the gravel is greenish-yellow in color. Some clayey till-like bonding around the gravel. PID = 0.0 ppm |

Log continued on next page

Fill (made ground) USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CJS
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-211 (CHI-6)

SHEET 2 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Next to Cement Plant

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/24/16
 DATE COMPLETED: 2/24/16

COORDS: N: 260,581.01 E: 357,470.96
 GS ELEVATION: 12.9 ft
 WEATHER: Rain
 TEMPERATURE: 46 deg F

INCLINATION: 90
 DEPTH W.L.: 11.1 ft
 ELEVATION W.L.: 1.8 ft
 DATE W.L.: 2/24/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|-------------|------------|---|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SM | | S6 | SS | 22-20-21-20 | 41 | 0.8 2.0 | | |
| | -15 | | | | | | | | | | | |
| | | | | | | 29.0 | S7 | SS | 16-20-24-20 | 44 | 0.8 2.0 | Brown, wet to saturated, dense, fine to coarse SAND, trace gravel, little silt, trace clay, (SM). Some clayey till-like bonding around gravel with some orange and red oxidation coloring in this bond zone. PID = 0.0 ppm |
| 30.0 | | | | | | | | | | | | |
| | -20 | | | | | | | | | | | |
| | | | | | | 34.0 | S8 | SS | 11-11-16-18 | 27 | 1.6 2.0 | Brown, wet to saturated, medium dense, fine to coarse SAND, grading to fine sand at 11", (SP). PID = 0.0 ppm |
| 35.0 | | | | | | | | | | | | |
| | -25 | | | | | | | | | | | |
| | | | | | | 39.0 | S9 | SS | 15-20-23-28 | 43 | 1.7 2.0 | Gray, wet, dense, fine to medium sandy SILT, (ML). Medium sand is in brown bands. At 5.5" and 17.5": oxidized bands. PID = 0.0 ppm |
| 40.0 | | | | | | | | | | | | |
| | -30 | | | | | | | | | | | |
| | | | | | 44.0 | S10 | SS | 18-30-35-37 | 65 | 1.0 2.0 | Gray, wet, dense, fine to medium sandy SILT, (ML). Oxidized banding throughout. PID = 0.0 ppm | |
| 45.0 | | | | | | | | | | | | |
| | -35 | | | | | | | | | | | |
| | | | | | 49.0 | S11 | SS | 28-31-32-35 | 63 | 2.0 2.0 | Brown, wet, very dense, fine to medium SAND, little silt, trace gravel, (SM). PID = 0.0 ppm | |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CJS
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-211 (CHI-6)


SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Next to Cement Plant

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/24/16
 DATE COMPLETED: 2/24/16

COORDS: N: 260,581.01 E: 357,470.96
 GS ELEVATION: 12.9 ft
 WEATHER: Rain
 TEMPERATURE: 46 deg F

INCLINATION: 90
 DEPTH W.L.: 11.1 ft
 ELEVATION W.L.: 1.8 ft
 DATE W.L.: 2/24/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|-------------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | SM |  | | S11 | SS | 28-31-32-35 | 63 | <u>2.0</u> 2.0 | |

Boring completed at 51.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. 4" casing to 9' bgs - 3" casing to 24' bgs - open hole below

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDER NH 2011.GDT 5/10/16

 Fill (made ground)
  USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CJS
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-212 (CHI-2)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/19/16
 DATE COMPLETED: 2/23/16

COORDS: N: 260,942.62 E: 357,201.33
 GS ELEVATION: 9.1 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 37-40 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 6.9 ft
 ELEVATION W.L.: 2.2 ft
 DATE W.L.: 2/23/2016
 TIME W.L.: 0945

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | | |
|--------------|-----------------|--|------|--------------------|---|--------|----------------|-------------------|----|------------|---|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | | |
| 0.0 | | 0.0 - 19.0ft Brown to dark gray, fine to coarse SAND, some to trace gravel, some to trace silt, (FILL). | SM | | 0.0 | S1 | SS | 3-6-8-15 | 14 | 1.3 2.0 | Brown, damp, medium dense, fine to coarse SAND, little silt, trace gravel, (SW-SM). PID = 0.2 ppm | | | |
| 5 | | | | | 4.0 | S2 | SS | 12-13-14-13 | 27 | 1.2 2.0 | Top 6": Brown, wet, medium dense, fine to coarse SAND, trace gravel, trace silt, (SW-SM). Bottom 8": Pale brown, damp, medium dense, fine to medium SAND, trace silt (SP). PID = 7.3 ppm | | | |
| 10.0 | | | | | 9.0 | S3 | SS | 29-42-45-29 | 87 | 1.5 2.0 | Dark, wet, very dense, silty fine to coarse SAND, some gravel, trace organics (SM). Strong hydrocarbon odor and visible sheen. At 10": Brick. PID = 42.1 ppm | | | |
| 15.0 | | | | | 14.0 | S4 | SS | 9-11-11-17 | 22 | 1.0 2.0 | Dark gray, wet, medium dense, gravelly fine to coarse SAND, some silt, (SM). Strong hydrocarbon odor and visible sheen. PID = 30.2 ppm | | | |
| 20.0 | | | | | 19.0 - 61.0ft Brown, fine to coarse SAND, some to trace gravel, little to trace silt, (Outwash). | SP | | 19.0 | S5 | SS | 11-12-18-22 | 30 | 1.1 2.0 | Grayish brown, wet, dense, fine to coarse SAND, little gravel, trace silt, (SP). PID = 3.5 ppm |
| 25.0 | | | | | | | | 24.0 | S6 | SS | 20-23-26-28 | 49 | 1.4 2.0 | Brown, wet, dense, fine to coarse SAND, little gravel, trace silt, (SP). At 14": 1" thick layer of fine sandy silt. PID = 1.9 ppm |

Fill (made ground) USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

Log continued on next page

RECORD OF BOREHOLE B-212 (CHI-2)

SHEET 2 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/19/16
 DATE COMPLETED: 2/23/16

COORDS: N: 260,942.62 E: 357,201.33
 GS ELEVATION: 9.1 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 37-40 deg F

INCLINATION: 90
 DEPTH W.L.: 6.9 ft
 ELEVATION W.L.: 2.2 ft
 DATE W.L.: 2/23/2016
 TIME W.L.: 0945

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|-------------|------------|---|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SP | | S6 | SS | 20-23-26-28 | 49 | 1.4 2.0 | | |
| | | | | | | | | | | | | |
| | -20 | | | | | 29.0 | S7 | SS | 23-33-36-38 | 69 | 1.7 2.0 | Brown, wet, very dense, fine to coarse SAND, little gravel, trace silt, (SP). PID = 3.0 ppm |
| 30.0 | | | | | | | | | | | | |
| | -25 | | | | | 34.0 | S8 | SS | 9-8-10-18 | 18 | 1.3 2.0 | Brown, wet, medium dense, fine to medium SAND, little gravel, trace silt, (SP). From 1" - 2" and 12" - 15": gravel lens. From 9" - 11": oxidation of sand. PID = 2.3 ppm |
| 35.0 | | | | | | | | | | | | |
| | -30 | | | | | 39.0 | S9 | SS | 15-20-12-10 | 32 | 0.8 2.0 | Top 6": Brown, wet, dense, medium to coarse SAND, some gravel, trace silt, (SP). Bottom 4": Brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.7 ppm. |
| 40.0 | | | | | | | | | | | | |
| | -35 | | | | | 44.0 | S10 | SS | 17-11-11-14 | 22 | 1.3 2.0 | Brown, wet, medium dense, silty fine SAND, trace gravel, (SM). From 0" - 3": fine to coarse sand. PID = 0.0 ppm |
| 45.0 | | | | | | | | | | | | 46.0 ft: Driller's Note: Sand coming into the casing at ~46' bgs. |
| | -40 | | | | 49.0 | S11 | SS | 18-15-18-16 | 33 | 1.3 2.0 | Brown, wet, dense, fine to coarse sandy GRAVEL, little silt, (GM). PID = 0.0 ppm. | |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-212 (CHI-2)

SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/19/16
 DATE COMPLETED: 2/23/16

COORDS: N: 260,942.62 E: 357,201.33
 GS ELEVATION: 9.1 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 37-40 deg F

INCLINATION: 90
 DEPTH W.L.: 6.9 ft
 ELEVATION W.L.: 2.2 ft
 DATE W.L.: 2/23/2016
 TIME W.L.: 0945

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|----------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | | [Dotted Pattern] | | S11 | SS | 18-15-18-16 | 33 | 1.3 2.0 | |
| -45 | | | | | | | | | | | |
| 55.0 | | | SP | | 54.0 | S12 | SS | 29-26-24-18 | 50 | 2.0 2.0 | Top 20": Brown, wet, very dense, fine to coarse SAND, some gravel, little silt, (SM). Bottom 4": Brown, wet, hard, SILT, trace gravel, trace fine to coarse sand, (ML). Oxidation of the gravel. PID = 0.0 ppm. |
| -50 | | | | | | | | | | | |
| 60.0 | | | | | 59.0 | S13 | SS | 15-23-16-20 | 39 | 1.3 2.0 | Brown, wet, dense, fine to coarse SAND, some gravel, little silt, (SP-SM). At 12": large gravel clasts. PID = 0.0 ppm. |

Boring completed at 61.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 22.5' away from the borehole. No vibrations detected.
3. 4" casing to 30' bgs - 3" casing to 55' bgs - open hole below

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

Fill (made ground)
 USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
Allens Ave. Regulator Rebuild-Geo Suppor
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-1
SHEET: 1 of 2
PROJECT NO: 33554.80
REVIEWED BY: J. Marsland

Logged By: R. Ryan
Drilling Co.: Geologic
Foreman: D, Jacobs

Type of Rig: ATV
Rig Model: Tack 45
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11
Final Boring Depth (ft.): 40
Date Start - Finish: 4/26/2016 - 4/27/2016

H. Datum:
V. Datum:
NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5"

Sampler Type: SS
Sampler O.D. (in.): 2.5
Sampler Length (in.): 24
Rock Core Size:

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|-----------|------|-------------|------------|
| 4/27/2016 | | 6 | 0 Hr |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | SPT Value | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------|-------------|-----------|-----------|-------------------|-----------|---|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 5 | | S-1 | 5-7 | 18 | 24 | 2 1 1 4 | 2 | S-1 : Top 4": Very soft, gray/brown, CLAY and SILT Bottom 6": Medium dense, olive/gray, fine SAND and SILT, slight odor (very moist) | 1 | | 0.3 | FILL | 10.7 |
| | | S-2 | 8-10 | 18 | 24 | WOH 3 3 10 | 6 | S-2 : Top 6": Loose, olive/gray, fine to coarse SAND, some Silt (moist) Bottom 12": Loose, gray, fine to medium SAND, some Silt, trace Gravel (moist) | | | 9 | | 2.0 |
| 10 | | S-3 | 10-12 | 24 | 16 | 8 9 10 12 | 19 | S-3 : Top 11": Medium dense, gray SILT, some fine Sand, no odor (Wet) Bottom 5": Medium dense, gray, fine to coarse SAND, some Silt, trace Gravel, no odor (Wet) | | | | | |
| 15 | | S-4 | 16-18 | 24 | 15 | 8 10 11 14 | 21 | S-4 : Medium dense, gray SILT, some fine Sand (wet) | | | | | |
| 20 | | S-5 | 20-22 | 24 | 6 | 8 6 6 5 | 12 | S-5 : Top: Medium dense, gray, fine to coarse SAND, some Gravel, some Silt (Wet) Bottom: Medium dense, fine to coarse SAND and GRAVEL, little Silt, stratified. | | | | | |
| 25 | | S-6 | 25-27 | 24 | 10 | 12 11 13 15 | 24 | S-6 : Medium dense, gray/dark gray, stratified fine to coarse SAND and GRAVEL, little Silt (wet), moderate odor | | | | | |
| 30 | | | | | | | | | | | | | |

REMARKS
1 - Vacuum excavate to 5' below grade before sampling. Top 5' consists of fine to medium sand and gravel (fill).

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-1

GZA TEMPLATE TEST BORING; 5/13/2016; 3:36:10 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 Allens Ave. Regulator Rebuild-Geo Suppor
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-1
 SHEET: 2 of 2
 PROJECT NO: 33554.80
 REVIEWED BY: J. Marsland

Logged By: R. Ryan
 Drilling Co.: Geologic
 Foreman: D, Jacobs

Type of Rig: ATV
 Rig Model: Tack 45
 Drilling Method:
 Drive & Wash

Boring Location: See Plan
 Ground Surface Elev. (ft.): 11
 Final Boring Depth (ft.): 40
 Date Start - Finish: 4/26/2016 - 4/27/2016

H. Datum:
 V. Datum:
 NAVD 88

Hammer Type: Automatic Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D Dia (in.): 4.5"

Sampler Type: SS
 Sampler O.D. (in.): 2.5
 Sampler Length (in.): 24
 Rock Core Size:

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|-----------|------|-------------|------------|
| 4/27/2016 | | 6 | 0 Hr |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | SPT Value | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------------------------------|-------------|-----------|-----------|-------------------|-----------|---|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | S-7 | 30-32 | 24 | 14 | 26 28 29 30 | 57 | S-7 : Very dense, tan/brown, fine to coarse SAND and GRAVEL, some Silt, moderate odor | | | | | |
| 35 | | S-8 | 35-37 | 24 | 0 | 17 21 12 12 | 33 | S-8 : NO RECOVERY (wash consists of coarse sand and gravel) | | | | OUTWASH | |
| 40 | | S-9 | 38-40 | 24 | 12 | 10 6 8 12 | 14 | S-9 : Medium dense, gray, fine to coarse SAND, trace Silt, trace Gravel | | | 40 | | -29.0 |
| | | End of exploration at 40 feet. | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-1

GZA TEMPLATE TEST BORING; 5/13/2016; 3:36:20 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
Allens Ave. Regulator Rebuild-Geo Suppor
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-2
SHEET: 1 of 2
PROJECT NO: 33554.80
REVIEWED BY: J. Marsland

Logged By: R. Ryan
Drilling Co.: Geologic
Foreman: D, Jacobs

Type of Rig: ATV
Rig Model: Tack 45
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 4
Date Start - Finish: 4/27/2016 - 4/28/2016

H. Datum:
V. Datum:
NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size:

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|-----------|------|-------------|------------|
| 4/28/2016 | | 6 | 0 Hr |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | | | | | | | | | | 0.5 | TOPSOIL | | |
| 5 | | S-1 | 4-6 | 24 | 5 | 6 3 3 6 | 6 | S-1 : Loose, tan, fine to coarse SAND and GRAVEL, trace Silt (Wet) | 1 | | 8 | FILL | |
| | | S-2 | 6-8 | 24 | 12 | 7 6 7 9 | 13 | S-2 : Medium dense, dark gray fine to coarse SAND and GRAVEL, trace Silt (wet) | | | | | |
| 10 | | S-3 | 9-11 | 24 | 12 | 13 12 11 7 | 23 | S-3 : Medium dense, gray fine to coarse SAND, some Silt, trace Gravel, some odor (wet) | 2 | | 9.5 | CONCRETE | |
| 15 | | S-4 | 14-16 | 24 | 5 | 14 10 8 12 | 18 | S-4 : Medium dense, black fine to medium SAND, some Silt, very strong odor (wet) | | | | | |
| 20 | | S-5 | 19-21 | 24 | 12 | 14 19 14 17 | 33 | S-5 : Dense, black fine to coarse SAND, some Silt, little Gravel (strong odor) | | | | OUTWASH | |
| 25 | | S-6 | 24-26 | 24 | 13 | 14 15 16 15 | 31 | S-6 : Dense, black fine to coarse SAND, some Silt, trace Gravel, strong odor (wet) | | | | | |
| 30 | | S-7 | 29-31 | 24 | 18 | 15 21 | 46 | S-7 : Top: Dense, black fine to coarse SAND, some Silt, | | | | | |

REMARKS
1 - Perched water at 4'± below grade.
2 - Refusal ar 8'± below grade. Core through concrete slab from 8'± to 9.5'±.

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-2

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 Allens Ave. Regulator Rebuild-Geo Suppor
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-2
SHEET: 2 of 2
PROJECT NO: 33554.80
REVIEWED BY: J. Marsland

Logged By: R. Ryan
Drilling Co.: Geologic
Foreman: D, Jacobs

Type of Rig: ATV
Rig Model: Tack 45
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 4
Date Start - Finish: 4/27/2016 - 4/28/2016

H. Datum:
V. Datum:
 NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size:

| Groundwater Depth (ft.) | | | |
|-------------------------|------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 4/28/2016 | | 6 | 0 Hr |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | SPT Value | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | | | | 25 30 | | trace Gravel, some odor (wet) Bottom: Dense, gray fine SAND and SILT, slight odor (wet) | | | | | |
| 35 | | S-8 | 34-36 | 24 | 14 | 8 10 8 10 | 18 | S-8 : Medium dense, dark gray fine to coarse SAND, some Silt, slight odor (wet) | | | | OUTWASH | |
| 45 | | S-9 | 44-46 | 24 | 11 | 7 20 16 17 | 36 | S-9 : Dense, dark gray/black, fine to medium SAND, little Silt, some odor End of exploration at 4 feet. | | | 46 | | |
| 50 | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-2

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 Allens Ave. Regulator Rebuild-Geo Suppor
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-3
SHEET: 1 of 1
PROJECT NO: 33554.80
REVIEWED BY: J. Marsland

Logged By: R. Ryan
Drilling Co.: Geologic
Foreman: D, Jacobs

Type of Rig: ATV
Rig Model: Tack 45
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 3.5
Date Start - Finish: 4/27/2016 - 4/27/2016

H. Datum:
V. Datum:
 NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size:

| Groundwater Depth (ft.) | | | |
|-------------------------|------|-----------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 4/27/2016 | | NOT ENCOUNTERED | |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | SPT Value | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 5 | | | | | | | | | | 1 | 3.5 | FILL | |
| 10 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |

REMARKS
 1 - Vacuum excavate to 3.5'± below grade, refusal encountered on buried concrete. Abandon vacuum excavation.

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-3

GZA TEMPLATE TEST BORING; 5/13/2016; 3:37:38 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-1
SHEET: 1 of 1
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10
Final Boring Depth (ft.): 22.5
Date Start - Finish: 6/3/2019 - 7/23/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NA

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 6/3/19 | 12:00 | N/A | 6.5 | N/A |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | | S-1 | 1.0 | | | | | S-1: Brown, fine SAND, some Silt, trace Gravel, dry (SM) | 0.7 | 1 | | | |
| | | S-2 | 3.0 | | | | | S-2: Brown, fine SAND and SILT, trace Gravel, dry (SM) | 5.3 | 2 | | | |
| 5 | 42 | | | | | | | | | | | | |
| | 70 | S-3 | 5.0 | | | | | S-3: Brown, fine to coarse SAND, fine Silt, trace Gravel, dry (SM) | 6.1 | | | | |
| | 115 | S-4 | 6.0-8.0 | 24 | 12 | 5 20 37 58 | 57 | S-4: Top 3": Very dense, gray, fine to coarse SAND, trace Gravel, trace Silt, moist, (SW-SM) | 22.4 | | | | |
| | 160 | | | | | | | Bottom 9": Very dense, black, fine to coarse SAND and GRAVEL, little Silt, trace Organic Silt, slight petroleum-like odor, moist (SM) | 46.0 | 3 | | | |
| 10 | | S-5 | 9.0-10.0 | 12 | 2 | 7 2 | - | S-5: Loose, black, fine to coarse SAND and GRAVEL, trace Silt, trace Wood, slight petroleum-like odor, wet (SW-SM) | 399.2 | | | | |
| | 24 | S-6 | 10.0-12.0 | 24 | 5 | 5 2 2 4 | 4 | S-6: Loose, black, fine to coarse SAND, little Gravel, little Silt, strong petroleum-like odor, wet (SM) | 323.9 | | | FILL | |
| | 45 | S-7 | 12.0-14.0 | 24 | 10 | 5 4 5 3 | 9 | S-7: Loose, black, fine to coarse SAND, some Gravel, trace Silt, strong petroleum-like odor, wet (SW-SM) | 292.0 | | | | |
| 15 | 64 | S-8 | 14.0-16.0 | 24 | 10 | 5 8 12 14 | 20 | S-8: Medium dense, black, fine to coarse SAND and GRAVEL, trace Silt, strong petroleum-like odor, slight sheen, wet (SW-SM) | 286.0 | | | | |
| | 18 | | | | | | | | | | | | |
| | 25 | S-9 | 16.0-18.0 | 24 | 7 | 24 18 14 15 | 32 | S-9: Dense, black, fine to coarse SAND and GRAVEL, little Silt, strong petroleum-like odor, slight sheen, wet (SM) | 258.6 | | | | |
| | 58 | | | | | | | | | | | | |
| | 159 | S-10 | 18.0-20.0 | 24 | 8 | 12 12 17 30 | 29 | S-10: Medium dense, black-gray, fine to coarse SAND, some Gravel, little Silt, strong petroleum-like odor, wet (SM) | 336.4 | | | | |
| 20 | 53 | | | | | | | | 189.1 | | | | |
| | 49 | S-11 | 20.0-22.0 | 24 | 10 | 14 36 43 16 | 79 | S-11: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, slight petroleum-like odor, wet (SM) | | | | | |
| | 157 | | | | | | | | | | | | |
| | 266/6" | | | | | | | | | 4 | 22.5 | -12.5 | |
| | | | | | | | | End of exploration at 22.5 feet | | | | | |
| 25 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |

REMARKS

- 1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 6.5 feet bgs on 6/3/19.
- 2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
- 3 - Drilled through expected boulder between 8 and 9 feet bgs.
- 4 - Casing refusal, obstruction encountered at 22.5 feet bgs. Drive shoe broke off casing and was abandoned at the bottom of the borehole. PRV-1 was terminated and relocated, see PRV-1A.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-1A
SHEET: 1 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.5
Final Boring Depth (ft.): 150.9
Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | No. | Sample | | | | Blows (per 6 in.) | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----|-------------|-----------|-----------|-------------------|-------------------|---|---|-----------|--------|-------------|---------------------|-------------|
| | | | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | | |
| 5 | | | | | | | | | | | 1 | | | |
| | | | | | | | | | | | 2 | | | |
| | | | | | | | | | | | 3 | | | |
| | | | | | | | | | | | 4 | | | |
| | | S-1 | 22.0-24.0 | 24 | 13 | 19 32 | 66 | S-1: Top 11": WOOD, slight petroleum-like odor, wet | 14.2 | 5 | | | | |
| | | S-2 | 24.0-26.0 | 24 | 10 | 8 24 | 62 | Bottom 2": Gray, SILT and GRAVEL, some Sand, trace Wood, slight petroleum-like odor, wet (ML) | 47.2 | | | | | |
| | 90 | | | | | 38 62 | | S-2: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | 1.6 | | | | | |
| | 108 | | | | | | | | | | 26 | | -16.5 | |
| | 153 | | | | | | | | | | | | | |
| | 168 | | | | | | | | | | | | | |
| | 207 | S-3 | 29.0-31.0 | 24 | 8 | 20 16 | 40 | S-3: Dense, gray, fine to coarse SAND, some Gravel, little Silt, | 0.6 | | | | | |
| 30 | | | | | | | | | | | | | | |

REMARKS

- 1 - Test boring PRV-1A offset 15' west from PRV-1 due to obstruction encountered at PRV-1.
- 2 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 6 feet bgs on 7/23/19.
- 3 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
- 4 - Timber fragments observed in drill fluid between 9 and 22 feet bgs.
- 5 - Drilled to 22 feet bgs and began sampling at PRV-1 termination depth.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-1A
SHEET: 2 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.5
Final Boring Depth (ft.): 150.9
Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----------|-------------|-----------|-----------|-------------------|---|---|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 65 | | | | | | 24 31 | | wet (SM) | | | | | |
| 90 | | | | | | | | | | | | | |
| 144 | | | | | | | | | | | | | |
| 154 | | | | | | | | | | | | | |
| 167 | S-4 | 34.0-36.0 | 24 | 2 | 8 8 | 17 | S-4: Medium dense, gray, fine to coarse GRAVEL and SAND, trace Silt, wet (SW-SM) | | 0.5 | | | | |
| 84 | | | | | 9 13 | | | | | | | | |
| 76 | | | | | | | | | | | | | |
| 89 | | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | | |
| 151 | S-5 | 39.0-41.0 | 24 | 11 | 9 7 | 15 | S-5: Medium dense, gray/brown, fine to coarse SAND, trace Gravel, trace Silt, wet (SW-SM) | | 0.0 | 6 | | | |
| 40 | | | | | 8 7 | | | | | | | | |
| 45 | S-6 | 44.0-46.0 | 24 | 6 | 16 14 | 30 | S-6: Medium dense, gray fine to coarse GRAVEL, some Sand, trace Silt, wet (GW-GM) | | 0.0 | | | GLACIAL OUTWASH | |
| 29 | | | | | 16 13 | | | | | | | | |
| 84 | | | | | | | | | | | | | |
| 67 | S-7 | 49.0-51.0 | 24 | 1 | 26 16 | 37 | S-7: Dense, brown/gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | | 0.0 | | | | |
| 40 | | | | | 21 17 | | | | | | | | |
| 42 | | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | | |
| 81 | S-8 | 54.0-56.0 | 24 | 6 | 23 18 | 39 | S-8: Dense, gray/brown, fine to coarse SAND and GRAVEL, some Silt, wet (SM) | | 0.0 | | | | |
| 69 | | | | | 21 19 | | | | | | | | |
| 35 | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | |
| 75 | S-9 | 59.0-61.0 | 24 | 9 | 15 15 | 45 | S-9: Dense, brown, fine to coarse SAND and GRAVEL, some | | 0.0 | | | | |
| 60 | | | | | | | | | | | | | |

REMARKS 6 - 5-inch casing driven to 39 feet bgs. Driller proceeded with 4-inch casing.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-1A
SHEET: 3 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.5
Final Boring Depth (ft.): 150.9
Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 54 | | | | | | 30 20 | | Silt, wet (SM) | | | | | |
| 65 | | | | | | | | | | | | | |
| 104 | | S-10 | 64.0-66.0 | 24 | 10 | 27 23 | 50 | S-10: Dense, gray/brown, fine to coarse GRAVEL, some Sand, little Silt, wet (GM) | 0.0 | | | | |
| 54 | | | | | | 27 16 | | | | | | | |
| 100 | | S-11 | 69.0-71.0 | 24 | 10 | 15 9 | 19 | S-11: Medium dense, gray, SILT, some fine Sand, wet (ML) | 0.0 | | | | |
| 34 | | | | | | 10 10 | | | | | | | |
| 59 | | S-12 | 74.0-76.0 | 24 | 12 | 10 9 | 21 | S-12: Medium dense, gray Clayey SILT, trace Sand, wet (ML) | 0.0 | | | | |
| 12 | | | | | | 12 11 | | | | | | | |
| 79.0-81.0 | | S-13 | 79.0-81.0 | 24 | 12 | 17 12 | 29 | S-13: Medium dense, gray, fine SAND and SILT, trace Gravel, wet (SM) | 0.0 | | | | |
| 17 | | | | | | 17 13 | | | | | | | |
| 84.0-86.0 | | S-14 | 84.0-86.0 | 24 | 14 | 24 10 | 23 | S-14: Medium dense, gray, fine SAND, trace Silt, wet (SP-SM) | 0.0 | | | | |
| 13 | | | | | | 13 17 | | | | | | | |
| 89.0-91.0 | | S-15 | 89.0-91.0 | 24 | 16 | 13 12 | 34 | S-15: Dense, gray, fine SAND, trace Silt, wet (SP-SM) | 0.0 | | | | |
| 13 | | | | | | | | | | | | | |

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-1A
SHEET: 4 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.5
Final Boring Depth (ft.): 150.9
Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-------------|-------------|-----------|---------------|-------------------|--|---|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 62 | | | | | | 22 20 | | | | | | | |
| 45 | | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | |
| 212 | | | | | | | | | | | | | |
| 297 | S-16 | 94.0-96.0 | 24 | 18 | 10 10 | 29 | S-16: Medium dense, gray, fine SAND, trace Silt, wet (SP-SM) | 0.0 | | | | | |
| 203 | | | | | 19 23 | | | | | | | | |
| 187 | | | | | | | | | | | | | |
| 249 | | | | | | | | | | | | | |
| 315 | | | | | | | | | | | | | |
| 401 | S-17 | 99.0- | 24 | 13 | 46 32 | 69 | S-17: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | 0.0 | | 99 | -89.5 | | |
| 228 | | 101.0 | | | 37 38 | | | | | | | | |
| 234 | | | | | | | | | | | | | |
| 253 | | | | | | | | | | | | | |
| 457 | | | | | | | | | | | | | |
| 614 | S-18 | 104.0-105.0 | 11.4 | 11 | 53 100 /5" | R | S-18: Very dense, gray, fine to coarse SAND and GRAVEL, trace Silt, wet (SW, SM) | 0.0 | 8 | | | | |
| 110 | S-19 | 109.0-110.4 | 17 | 13 | 92 80 100 /5" | R | S-19: Very dense, gray, fine to coarse SAND, some Silt, little Gravel, wet (SM) | 0.0 | | | | GLACIAL TILL | |
| 115 | S-20 | 114.0-116.0 | 24 | 10 | 51 53 52 67 | 105 | S-20: Very dense, gray, fine to coarse SAND, some Gravel, little Silt, wet (SM) | 0.0 | | | | | |
| 120 | S-21 | 119.0- | 5 | 3 | 100 /5" | R | S-21: Very dense, gray fine to coarse GRAVEL, some Sand, | 0.0 | | | | | |

REMARKS
 8 - 4-inch casing driven to 104 feet bgs. Driller proceeded with 3-inch casing.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-1A
 SHEET: 5 of 6
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
 Drilling Co.: Geologic Inc.
 Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
 Rig Model: CME-75
 Drilling Method:
 Drive & Wash

Boring Location: See Plan
 Ground Surface Elev. (ft.): 9.5
 Final Boring Depth (ft.): 150.9
 Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
 V. Datum: NAVD 88

Hammer Type: Automatic Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | No. | Sample | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|------|-------------|-----------|-----------|-------------------|-----------|---|-----------|--------|-------------|---------------------|--------------|
| | | | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | 119.4 | | | | | | | | | | |
| 125 | | S-22 | 124.0-124.4 | 5 | 3 | 100 /5" | R | S-22: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | 0.0 | | | | |
| 130 | | S-23 | 129.0-130.3 | 15 | 4 | 45 83 100 /3" | R | S-23: Very dense, gray, fine to coarse SAND, little Gravel, little Silt, wet | 0.0 | 9 | | | |
| 135 | | S-24 | 134.0-136.0 | 24 | 14 | 54 62 58 72 | | S-24: Very dense, gray, fine to coarse SAND, little Gravel, little Silt, wet (SM) | 0.0 | | | | GLACIAL TILL |
| 140 | | S-25 | 139.0-141.0 | 24 | 9 | 10 17 32 79 | | S-25: Dense, gray, fine to medium SAND, trace Gravel, trace Silt, wet (SP-SM) | 0.0 | | | | |
| 145 | | S-26 | 144.0-146.0 | 24 | 16 | 29 21 29 65 | | S-26: Dense, gray, fine to coarse SAND, trace Silt, wet (SP-SM) | 0.0 | | | | |
| 150 | | S-27 | 149.0- | 23 | 12 | 9 13 | | S-27: Very dense, gray, SILT, some fine Sand, wet (ML) | 0.0 | 10 | | | |

REMARKS
 9 - Sample S-23 contained approximately 20 inches of blowing sands.
 10 - 3-inch casing driven to 149 feet bgs.

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Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-1A
SHEET: 6 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.5
Final Boring Depth (ft.): 150.9
Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | No. | Sample | | | | Blows (per 6 in.) | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----|-----------|-----------|-------------------|-----------|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | | | |
| 150.9 | | | | | | 63 | 100/5" | | | | | 150.9 | GLACIAL TILL | 141.4 |
| | | | | | | | | | | | | | | |
| 155 | | | | | | | | | | | | | | |
| 160 | | | | | | | | | | | | | | |
| 165 | | | | | | | | | | | | | | |
| 170 | | | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | | | |
| 180 | | | | | | | | | | | | | | |

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-2
SHEET: 1 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-----------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| 5 | | S-1 | 1.0 | | | | | S-1: Brown, fine to coarse SAND, little Gravel, little Silt, dry (SM) | 1.0 | 1 | FILL | | |
| | | S-2 | 4.0 | | | | | S-2: Brown, fine to coarse SAND and GRAVEL, little Silt, dry (SM) | 0.3 | 2 | | | |
| | | S-3 | 5.0 | | | | | S-3: Brown, fine to coarse SAND, some Gravel, little Silt, dry (SM) | 0.0 | | | | |
| | | S-4 | 6.0-8.0 | 24 | 2 | 11 10 7 10 | 17 | S-4: Medium dense, brown, fine to coarse SAND and GRAVEL, trace Silt, dry (SW-SM) | 5.1 | | | | |
| | | S-5 | 8.0-10.0 | 24 | 1 | 17 20 27 13 | 47 | S-5: Dense, black, fine to coarse SAND and SILT, trace Gravel, wet (SM) | 77.8 | | | | |
| 10 | 33 | | | | | | | S-6: Very dense, gray, fine GRAVEL and SAND, trace Silt (wet) (GM) | 125.7 | | | | |
| | 46 | S-6 | 10.0-12.0 | 24 | 2 | 11 71 37 79 | 108 | | | | | | |
| | 38 | | | | | | | | | | | | |
| 15 | 84 | | | | | | | | | | | | |
| | 53 | | | | | | | | | | | | |
| | 5 | S-7 | 14.0-16.0 | 24 | 10 | 21 20 28 45 | 48 | S-7: Dense, gray, fine to coarse SAND, trace Silt, slight petroleum-like odor, wet (SW-SM) | 27.2 | 3 | | | |
| | 64 | | | | | | | | | | | | |
| 20 | 78 | S-8 | 16.0-18.0 | 24 | 12 | 7 8 12 12 | 20 | S-8: Medium dense, gray, fine to coarse SAND, trace Silt, wet (SW-SM) | 0.4 | | GLACIAL OUTWASH | | |
| | 85 | | | | | | | | | | | | |
| | 104 | S-9 | 18.0-20.0 | 24 | 8 | 10 7 8 11 | 15 | S-9: Medium dense, gray, fine to coarse SAND, trace Silt, wet (SW-SM) | 0.2 | | | | |
| | 64 | | | | | | | | | | | | |
| | 99 | | | | | | | | | | | | |
| 25 | 86 | S-10 | 24.0-26.0 | 24 | WOH | 7 7 8 8 | 15 | S-10: NO RECOVERY | | | | | |
| | 156 | | | | | | | | | | | | |
| | 174 | | | | | | | | | | | | |
| 30 | 200 | | | | | | | | | | | | |
| | 183 | S-11 | 29.0-31.0 | 24 | 2 | 5 5 | 11 | S-11: Medium dense, gray, fine to coarse SAND, trace Silt, wet | 0.2 | 4 | | | |

REMARKS

- 1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 5.5 feet bgs on 6/3/19.
- 2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
- 3 - Sample S-7 obtained using a 3-inch split spoon.
- 4 - 5-inch casing driven to 29 feet bgs. Driller proceeded with 4-inch casing.

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Exploration No.:
PRV-2

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-2
SHEET: 2 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | WOH | | | | | 6 | 18 | (SW-SM) | | | | | |
| 26 | | | | | | | | | | | | | |
| 69 | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | |
| 74 | S-12 | 34.0-36.0 | 24 | WOH | WOH 3 | 7 | | S-12: NO RECOVERY | | | | | |
| 28 | | | | | 4 | 6 | | | | | | | |
| 60 | | | | | | | | | | | | | |
| 112 | | | | | | | | | | | | | |
| 107 | | | | | | | | | | | | | |
| 131 | S-13 | 39.0-41.0 | 24 | 5 | 65 | 51 | 69 | S-13: Very dense, gray, GRAVEL, some Silt, trace Sand, wet (GM) | 0.0 | | | | |
| 162 | | | | | 18 | 15 | | | | | | | |
| 247 | | | | | | | | | | | | | |
| 310 | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | |
| 87 | S-14 | 44.0-46.0 | 24 | 9 | 17 | 11 | 33 | S-14: Dense, gray, GRAVEL, little Silt, trace Sand, wet (GM) | 0.0 | | | | |
| 62 | | | | | 22 | 15 | | | | | | | |
| 66 | | | | | | | | | | | | | |
| 115 | | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | | |
| 181 | S-15 | 49.0-51.0 | 24 | 10 | 24 | 22 | 40 | S-15: Dense, brown, SILT and SAND, trace Gravel, wet (ML) | 0.0 | | | | |
| 101 | | | | | 18 | 16 | | | | | | | |
| 127 | | | | | | | | | | | | | |
| 110 | | | | | | | | | | | | | |
| 123 | | | | | | | | | | | | | |
| 93 | S-16 | 54.0-56.0 | 24 | 11 | 23 | 17 | 41 | S-16: Dense, brown, fine to coarse SAND, little Silt, trace Gravel, wet (SM) | 0.0 | | | | |
| 30 | | | | | 24 | 28 | | | | | | | |
| 36 | | | | | | | | | | | | | |
| 69 | | | | | | | | | | | | | |
| 132 | | | | | | | | | | | | | |
| 139 | S-17 | 59.0-61.0 | 24 | 8 | 8 | 12 | 25 | S-17: Medium dense, gray, fine to coarse SAND and GRAVEL, | 0.0 | | | | |

REMARKS

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Exploration No.:
PRV-2

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-2
SHEET: 3 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| 68 | | | | | | 13 13 | | little Silt, wet (SM) | | | | | |
| 56 | | | | | | | | | | | | | |
| 66 | | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | | |
| 126 | S-18 | 64.0-66.0 | 24 | 9 | 21 15 | 30 | | S-18: Medium dense, gray, fine to coarse SAND, some Silt, trace Gravel, wet (SM) | 0.0 | | | | |
| 96 | | | | | 15 12 | | | | | | | | |
| 94 | | | | | | | | | | | | | |
| 106 | | | | | | | | | | | | | |
| 232 | | | | | | | | | | | | | |
| 313 | S-19 | 69.0-71.0 | 24 | 16 | 20 18 | 44 | | S-19: Hard, dark gray SILT, trace Sand, wet (ML) | 0.0 | | | | |
| 172 | | | | | 26 36 | | | | | | | | |
| 140 | | | | | | | | | | | | | |
| 131 | | | | | | | | | | | | | |
| 116 | | | | | | | | | | | | | |
| 112 | S-20 | 74.0-76.0 | 24 | 10 | 13 22 | 34 | | S-20: Dense, dark gray, fine to coarse SAND, trace Silt, trace Gravel, wet (SW-SM) | 0.0 | | | | |
| 115 | | | | | 12 12 | | | | | | | | |
| 117 | | | | | | | | | | | | | |
| 133 | | | | | | | | | | | | | |
| 178 | | | | | | | | | | | | | |
| 151 | S-21 | 79.0-81.0 | 24 | 8 | 17 14 | 32 | | S-21: Dense, dark gray, SILT and fine SAND, trace Gravel, wet (SM) | 0.0 | | | | |
| 160 | | | | | 18 40 | | | | | | | | |
| 146 | | | | | | | | | | | | | |
| 155 | | | | | | | | | | | | | |
| 176 | | | | | | | | | | | | | |
| 205 | S-22 | 84.0-86.0 | 24 | 2 | 25 19 | 32 | | S-22: Dense, dark gray, fine to coarse GRAVEL and SAND, little Silt, wet (GM) | 0.0 | | | | |
| 260 | | | | | 13 15 | | | | | | | | |
| 240 | | | | | | | | | | | | | |
| 221 | | | | | | | | | | | | | |
| 137 | | | | | | | | | | | | | |
| 157 | S-23 | 89.0-91.0 | 24 | 2 | 24 30 | 57 | | S-23: Very dense, gray, fine to coarse SAND and GRAVEL, little | 0.0 | 5 | | | |

REMARKS
5 - 4-inch casing driven to 89 feet bgs. Driller proceeded with 3-inch casing.

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Exploration No.:
PRV-2

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-2
SHEET: 4 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | | | | | | 27 75 | | Silt, wet (SM) | | | | | |
| 95 | | S-24 | 94.0-96.0 | 24 | 9 | 21 8 11 12 | 19 | S-24: Medium dense, gray, fine to coarse SAND, little Silt, trace Gravel, wet (SM) | 0.0 | | 96 | GLACIAL OUTWASH | -87.0 |
| 100 | | S-25 | 99.0-101.0 | 24 | 12 | 17 23 24 52 | 47 | S-25: Dense, gray, fine to coarse SAND and fine GRAVEL, some Silt, wet (SM) | 0.0 | | | | |
| 105 | | S-26 | 104.0-106.0 | 24 | 8 | 44 54 44 51 | 98 | S-26: Top 3": Very dense, gray, GRAVEL (GW) Bottom 5": Very dense, gray, fine to coarse SAND and SILT, trace Gravel, wet (SM) | 0.0 | | | | |
| 110 | | S-27 | 109.0-110.4 | 17 | 2 | 7 54 100 /5" | R | S-27: Very dense, gray, fine to coarse SAND, little Silt, trace Gravel, wet (SM) | 0.0 | | | | |
| 115 | | S-28 | 114.0-115.3 | 15 | 15 | 35 46 100 /3" | R | S-28: Very dense, gray, fine to coarse SAND, trace Gravel, trace Silt, wet (SW-SM) | 0.0 | | | | |
| 120 | | S-29 | 118.0-120.0 | 24 | 24 | 59 41 33 100 | 74 | S-29: Top 12": Very dense, gray, fine to coarse SAND and fine Gravel, some Silt, wet (SM) Bottom 12": Very dense, Gray, fine to coarse SAND, little Silt, | 0.0 | 6 7 | | | |

REMARKS
6 - Sample S-29 taken at 118 feet bgs due to stick up height of casing resulting from telescoping casing. Driller proceeded to drive all casing to a stick-up height of 1.5 feet after taking sample S-29.
7 - Approximately 9 inches of stick-up observed on split spoon after flushing casing at 119 feet bgs due to blowing sands.

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TEST BORING LOG



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 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-2
 SHEET: 5 of 6
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
 Drilling Co.: Geologic Inc.
 Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
 Rig Model: CME-75
 Drilling Method:
 Drive & Wash

Boring Location: See Plan
 Ground Surface Elev. (ft.): 9
 Final Boring Depth (ft.): 149.75
 Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
 V. Datum: NAVD 88

Hammer Type: Automatic Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|--------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | | | | | | | | trace Gravel, wet (SM) | | | | | |
| 125 | | S-30 | 124.0-126.0 | 24 | 12 | 45 22 16 18 | 38 | S-30: Dense, gray, fine to coarse SAND, some Gravel, little Silt, wet (SM) | 0.0 | | | | |
| 130 | | S-31 | 129.0-130.9 | 23 | 24 | 35 40 70 100/5" | 110 | S-31: Very dense, gray, fine to coarse SAND, little Silt, trace Gravel, wet (SM) | 0.0 | 8 | | | |
| 135 | | S-32 | 134.0-136.0 | 24 | 10 | 42 47 87 34 | 134 | S-32: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | 0.0 | | | GLACIAL TILL | |
| 140 | | S-33 | 139.0-141.0 | 24 | 18 | 24 48 55 100 | 103 | S-33: Top 10": Very dense, gray, fine to coarse SAND, little Silt, trace Gravel, wet (SM) Bottom 8": Very dense gray, fine to coarse GRAVEL and SAND, some Silt, wet (GM) | 0.0 | | | | |
| 145 | | S-34 | 144.0-146.0 | 24 | 14 | 39 40 59 100 | 99 | S-34: Very dense, gray, fine to coarse SAND, some Gravel, little Silt, wet (SM) | 0.0 | | | | |
| 150 | | S-35 | 149.0- | 15 | 4 | 117 100/3" | R | S-35: Very dense, dark gray SILT, some Sand, trace Gravel, wet | 0.0 | 9 | 149.75 | | -140.8 |

REMARKS
 8 - Approximately 6 inches of stick-up observed on split spoon after flushing casing at 129 feet bgs due to blowing sands.
 9 - 3-inch casing spun to 149 feet bgs.

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TEST BORING LOG



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 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-2
 SHEET: 6 of 6
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
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Hammer Weight (lb.): 140
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Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | No. | Sample | | | | Blows (per 6 in.) | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----|-------------|-----------|-----------|--|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| | | | 149.75 | | | | | (ML) | | | | | | |
| 155 | | | | | | | | | | | | | | |
| 160 | | | | | | | | | | | | | | |
| 165 | | | | | | | | | | | | | | |
| 170 | | | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | | | |
| 180 | | | | | | | | | | | | | | |

REMARKS

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121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-3
SHEET: 1 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|-------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 8/1/19 | 07:45 | 1 day | 8 | 39 |
| 8/2/19 | 07:45 | 1 day | 11.6 | 74 |
| 8/5/19 | 09:15 | ~15 Minutes | 14.7 | 99 |

| Depth (ft) | Casing Blows / (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|---------------------------------|----------------------------|--------|-------------|-----------|-----------|-------------------|-------------------|-----------|---|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| 5 10 15 20 25 30 | 23 | S-1 | 1.0 | | | | | | S-1: Brown, SILT, some Sand, trace fine Gravel, dry (ML) | 1 | | | |
| | | S-2 | 2.0 | | | | | | S-2: Brown, fine to coarse SAND and SILT, little fine Gravel, dry (SM) | 2 | | | |
| | | S-3 | 3.5 | | | | | | S-3: Brown fine to coarse SAND, some Silt, trace fine Gravel, dry (SM) | | | | |
| | | S-4 | 4.0 | | | | | | S-4: Brown, fine to coarse SAND, some Silt, trace fine Gravel, dry (SM) | | | | |
| | 30 | S-5 | 6.0-8.0 | 24 | 3 | 8 3 3 11 | 6 | 6 | S-5: Loose, brown, fine to coarse SAND, some Silt, trace fine Gravel, slight petroleum-like odor, moist (SM) | | | | |
| | | S-6 | 8.0-10.0 | 24 | 7 | 8 10 16 17 | 26 | 26 | S-6: Medium dense, black, fine to coarse SAND, some Silt, little Gravel, slight petroleum-like odor, wet (SM) | | | | |
| | 24 | S-7 | 10.0-12.0 | 24 | 2 | 18 5 4 5 | 9 | 9 | S-7: Loose, gray, GRAVEL, trace fine to coarse Sand, trace Silt, wet (GW-GM) | | | | |
| | | S-8 | 12.0-14.0 | 24 | 0/1 | 6 3 5 5 | 8 | 8 | S-8: Loose, brown, fine to medium SAND, some Silt, wet (SM) | 3 | | | |
| | | S-9 | 14.0-16.0 | 24 | 8 | 8 6 3 3 | 9 | 9 | S-9: Loose, brown fine to coarse SAND, some Silt, trace Gravel, slight petroleum-like odor, wet (SM) | | | FILL | |
| | | S-10 | 16.0-18.0 | 24 | 13 | 4 7 7 8 | 14 | 14 | S-10: Medium dense, gray/brown, fine to coarse SAND, little Silt, trace fine Gravel, trace Wood, wet (SM) | | | | |
| | 31 | S-11 | 18.0-20.0 | 24 | 0/6 | 10 4 1 2 | 5 | 5 | S-11: Loose, brown, fine to coarse SAND, little Silt, trace fine Gravel, wet (SM) | 4 | | | |
| | | S-12 | 20.0-20.5 | 5.5 | 4 | 100 /6" | R | R | S-12: Brown/gray, fine GRAVEL, some fine to coarse Sand, little Silt, wet (GM) | 5 | | | |
| | 54 | S-13 | 22.0-24.0 | 24 | 4 | 7 6 6 6 | 12 | 12 | S-13: Medium dense, gray, GRAVEL, little Sand, trace Silt, wet (GW-GM) | | | | |
| | | S-14 | 24.0-26.0 | 24 | 1 | 14 9 4 5 | 13 | 13 | S-14: Medium dense, gray, GRAVEL, little fine to coarse Sand, trace Silt, wet (GW-GM) | 6 | | | |
| | | S-15 | 26.0-28.0 | 24 | 4 | 8 4 4 6 | 8 | 8 | S-15: Loose, brown/gray, fine to medium SAND, some Silt, wet (SM) | | | | |
| | | S-16 | 28.0-30.0 | 24 | 1 | 7 4 7 8 | 11 | 11 | S-16: Medium dense, brown, fine to medium SAND, little Silt, wet (SM) | | | | |

REMARKS

- 1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 6 feet bgs on 6/3/19.
- 2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
- 3 - Gravel observed in spoon tip of samples S-7 and S-8.
- 4 - No recovery for sample S-11. Driller pushed a 3-inch spoon to obtain sample for 18 feet to 20 feet bgs.
- 5 - Drilled through an expected boulder between 20.5 and 22 feet bgs.
- 6 - Gravel observed in spoon tip of sample S-14. Driller pushed a 3-inch spoon to obtain sample for 24 feet to 26 feet bgs.

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Exploration No.:
PRV-3

GZA TEMPLATE TEST BORING - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 9/24/19 15:48 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-3
 SHEET: 2 of 7
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|-------------|-------|--------|
| 8/1/19 | 07:45 | 1 day | 8 | 39 |
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| 8/5/19 | 09:15 | ~15 Minutes | 14.7 | 99 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-------------------|--|---|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| 35 | | S-17 | 34.0-36.0 | 24 | 2 | 12 13 26 21 | 39 | S-17: Dense, gray/brown, GRAVEL, little fine to coarse Sand, trace Silt, wet (GW-GM) | | | | | |
| 40 | | S-18 | 39.0-41.0 | 24 | 10 | 19 21 22 27 | 43 | S-18: Dense, GRAVEL and SILT, little fine to coarse Sand, wet (GM) | | | | | |
| 45 | | S-19 | 44.0-46.0 | 24 | 9 | 20 18 20 25 | 38 | S-19: Dense, brown, GRAVEL, some fine to coarse Sand, some Silt, moist (GM) | | | | | |
| 50 | | S-20 | 49.0-51.0 | 24 | 8 | 20 14 18 50 | 32 | S-20: Dense, brown, GRAVEL, some Silt, some fine to coarse SAND, moist (SM) | | | | | |
| 55 | | S-21 | 54.0-56.0 | 24 | 0 | 22 24 20 20 | 44 | S-21: NO RECOVERY | 7 | | | | |
| 60 | | S-22 | 59.0-61.0 | 24 | 5 | 6 29 | 64 | S-22: Very dense, gray, GRAVEL and fine to coarse SAND, some Silt, | 8 | | 60 | -51.0 | |

REMARKS
 7 - Gravel observed in spoon tip of sample S-21.
 8 - 5-inch casing driven to 59 feet bgs. Driller proceeded with 4-inch casing.

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Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-3
SHEET: 3 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|-------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
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| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-------------------|--|---|--------|-----------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| | | | | | | | 35 30 | | wet (GM) | | | | |
| 65 | | S-23 | 64.0-66.0 | 24 | 7 | 26 94 101 20 | 195 | S-23: Very dense, gray, fine to coarse GRAVEL and fine to coarse Sand, little Silt, wet (GM) | | | | | |
| 70 | | S-24 | 69.0-71.0 | 24 | 2 | 21 32 33 21 | 65 | S-24: Very dense, gray, GRAVEL, some fine to coarse Sand, little Silt, wet (GM) | | | | | |
| 75 | | S-25 | 74.0-76.0 | 24 | 3 | 63 17 19 12 | 36 | S-25: Dense, gray, GRAVEL, trace fine to coarse Sand, trace Silt, wet (GW-GM) | | | GLACIAL OUTWASH | | |
| 80 | | S-26 | 79.0-81.0 | 24 | 8 | 30 27 30 43 | 57 | S-26: Very dense, gray, GRAVEL, some fine to coarse Sand, little Silt, wet (GM) | | | | | |
| 85 | | S-27 | 84.0-86.0 | 24 | 6 | 16 17 14 17 | 31 | S-27: Dense, gray, fine to coarse SAND and fine GRAVEL, some Silt, wet (SM) | | | | | |
| 90 | | S-28 | 89.0-91.0 | 24 | 6 | 20 22 | 44 | S-28: Dense, gray, fine to coarse SAND, some Silt, trace fine Gravel, | | | | | |
| | | | | | | | | | | 90 | -81.0 | | |

REMARKS

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TEST BORING LOG



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GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-3
SHEET: 4 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|-------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 8/1/19 | 07:45 | 1 day | 8 | 39 |
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| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|--------------------|-------------------|--|---|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| | | | | | | | 22 14 | wet (SM) | | | | | |
| 95 | | S-29 | 94.0-96.0 | 24 | 7 | 28 15 16 12 | 31 | S-29: Dense, gray, fine to coarse SAND, some Silt, little Gravel, wet (SM) | | | | | |
| 100 | | S-30 | 99.0-101.0 | 24 | 6 | 29 19 11 12 | 30 | S-30: Dense, gray, fine to coarse SAND, some Silt, little Gravel, wet | | | | | |
| 105 | | S-31 | 104.0-106.0 | 24 | 8 | 29 23 18 17 | 41 | S-31: Dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | | 106 | | -97.0 | |
| 110 | | S-32 | 109.0-111.0 | 24 | 12 | 36 48 51 51 | 99 | S-32: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | | | | | |
| 115 | | S-33 | 114.0-115.9 | 23 | 12 | 53 44 58 100/5" | 102 | S-33: Very dense, gray, fine to coarse SAND, some fine Gravel, little Silt, wet (SM) | | | | | |
| 120 | | S-34 | 119.0- | 24 | 12 | 43 28 | 75 | S-34: Very dense, gray, fine SAND, trace fine Gravel, trace Silt, wet | | | | | |

REMARKS

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EXPLORATION NO.: PRV-3
SHEET: 5 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
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Boring Location: See Plan
Ground Surface Elev. (ft.): 9
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H. Datum: NAD 83
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Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
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| 8/1/19 | 07:45 | 1 day | 8 | 39 |
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| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-------------------|-----------|--|--------|-------------|---------------------|--------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| | | | 121.0 | | | | 47 | 53 | (SP-SM) | | | | |
| 125 | | S-35 | 124.0-126.0 | 24 | 12 | 33 | 25 | 52 | S-35: Very dense, gray, fine to coarse SAND, trace Silt, trace fine Gravel, wet (SW-SM) | 9 | | | |
| 130 | | S-36 | 129.0-131.0 | 24 | 12 | 35 | 30 | 70 | S-36: Very dense, gray, fine to coarse SAND, some fine Gravel, trace Silt, moist (SW-SM) | | | | |
| 135 | | S-37 | 134.0-135.5 | 18 | 10 | 31 | 50 | 150 | S-37: Very dense, gray, fine to coarse SAND, little fine Gravel, trace Silt, moist (SW-SM) | | | | GLACIAL TILL |
| 140 | | S-38 | 139.0-141.0 | 24 | 12 | 29 | 28 | 59 | S-38: Very dense, gray, fine to coarse SAND and fine GRAVEL, little Silt, wet (SM) | 10 | | | |
| 145 | | S-39 | 144.0-146.0 | 24 | 18 | WOR | | 0 | S-39: Very loose, gray, fine to medium SAND, trace Silt, wet (SP-SM) | 11 | | | |
| 150 | | S-40 | 149.0- | 24 | 17 | 29 | 27 | 74 | S-40: Very dense, gray, fine SAND, little Silt, wet (SM) | | | | |

REMARKS
 9 - Approximately 3 inches of spoon stick-up observed during sampling 124 feet to 126 feet bgs.
 10 - 4-inch casing spun to 139 feet bgs.
 11 - Driller began using drill mud at 144 feet bgs. Initial blow counts may not be representative of actual conditions.

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TEST BORING LOG



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Providence, Rhode Island

EXPLORATION NO.: PRV-3
SHEET: 6 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
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Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
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Sampler Type: SS
Sampler O.D. (in.): 2.0
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Rock Core Size: N/A

Groundwater Depth (ft.)

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|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-------------------|---|---|--------|-------------|---------------------|-------------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| | | | 151.0 | | | | 47 40 | | | | | | |
| 155 | | S-41 | 154.0-156.0 | 24 | 24 | 24 22 36 47 | 58 | S-41: Very dense, gray, fine SAND, trace Silt, wet (SP-SM) | | | | | |
| 160 | | S-42 | 159.0-161.0 | 24 | 12 | 23 24 42 34 | 66 | S-42: Very dense, gray, fine SAND, trace Silt, wet (SP-SM) | | | | | |
| 165 | | S-43 | 164.0-166.0 | 24 | 18 | 18 22 26 31 | 48 | S-43: Dense, gray, fine SAND, trace Silt, wet (SP-SM) | | | | GLACIAL TILL | |
| 170 | | S-44 | 169.0-171.0 | 24 | 19 | 12 19 26 33 | 45 | S-44: Hard, dark gray, SILT, trace fine Sand, wet (ML) | | | | | |
| 175 | | S-45 | 174.0-176.0 | 24 | 9 | 20 15 12 15 | 27 | S-45: Medium dense, dark gray, SILT, some fine to coarse Sand, little fine Gravel, wet (ML) | | | | | |
| 180 | | S-46 | 179.0- | 16 | 12 | 44 36 | R | S-46: WEATHERED ROCK | | 12 | 177 | -168.0 | WEATHERED BEDROCK |

REMARKS
12 - Increase in drill resistance observed at 177 feet bgs.

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EXPLORATION NO.: PRV-3
SHEET: 7 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
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Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
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Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|-------------|-------|--------|
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| 8/1/19 | 07:45 | 1 day | 8 | 39 |
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| 8/5/19 | 09:15 | ~15 Minutes | 14.7 | 99 |

GZA TEMPLATE TEST BORING - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 9/24/19 15:48 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|---|--|---|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | 180.3 | | | | | 100 /4" | | | | | |
| 185 | 3 | S-47 | 184.0- | 0 | 0 | 50 /0" | R | S-47: NO RECOVERY | | | | | |
| | 5 | C-1 | 184.0 | 60 | 48 | | | C-1: Top 15": Medium hard, fresh, slightly fractured, fine grained, tan/gray SANDSTONE | 13 | | 184 | | -175.0 |
| | 4 | | 185.0- | | | | | Bottom 33": Soft, fresh, sound, amorphous, gray SHALE with very thin bedding (REC=100%, RQD=23.3%) | | | | | |
| | 5 | | 190.0 | | | | | | | | | | |
| 190 | 5 | C-2 | 190.0- | 60 | 60 | | | C-2: Soft, fresh, sound, amorphous, gray SHALE with very thin bedding (REC=100%, RQD=50%) | | | | | |
| | 5 | | 195.0 | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| 195 | 6 | C-3 | 195.0- | 66 | 66 | | | C-3: Soft, fresh, sound, amorphous, gray SHALE with very thin bedding (REC=100%, RQD=35%) | | | | | |
| | 3 | | 200.5 | | | | | | | | | | |
| 200 | 3 | | | | | | | | | | 200.5 | | -191.5 |
| | | | | | | | | End of exploration at 200.5 feet | | | | | |
| 205 | | | | | | | | | | | | | |
| 210 | | | | | | | | | | | | | |

REMARKS
 13 - 3-inch casing installed to 184 feet bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-3

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-4
SHEET: 1 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.75
Final Boring Depth (ft.): 151
Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-----------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 5 | 120 | S-1 | 1.5 | | | | | S-1: Brown, SILT and fine SAND, dry (ML) | 0.0 | 1 | FILL | | |
| | | S-2 | 3.0 | | | | | S-2: Brown, fine to coarse SAND, some Gravel, some Silt, dry (SM) | 0.3 | 2 | | | |
| | | S-3 | 4.0 | | | | | S-3: Black, fine to coarse SAND, little Silt, trace Gravel, dry (SM) | 0.6 | | | | |
| | | S-4 | 6.0-8.0 | 24 | 10 | 8 7 | 18 | S-4: Medium dense, brown, SILT, little Sand, trace Gravel, moist (ML) | 0.0 | | | | |
| | | S-5 | 8.0-10.0 | 24 | 10 | 19 19 | 33 | S-5: Dense, brown, fine to coarse SAND, some Gravel, little Silt, moist (SM) | 0.0 | | | | |
| | | S-6 | 10.0-12.0 | 24 | 12 | 12 11 | 32 | S-6: Dense, gray/brown, fine to coarse SAND, some Gravel, little Silt, wet (SM) | 0.0 | | | | |
| | | S-7 | 12.0-14.0 | 24 | 3 | 18 25 | 65 | S-7: Very dense, gray, fine to coarse GRAVEL and SAND, trace Silt, wet (GW-GM) | 0.8 | 3 | | | |
| | | S-8 | 14.0-16.0 | 24 | 9 | 22 15 | 52 | S-8: Very dense, gray, fine to coarse SAND, some Gravel, trace Silt, wet (SW-SM) | 61.3 | | | | |
| | | S-9 | 19.0-21.0 | 24 | 1 | 17 11 | 36 | S-9: Dense, gray, fine GRAVEL, some Sand, trace Silt, wet (GW-GM) | 1.6 | 5 | | | |
| | | S-10 | 24.0-26.0 | 24 | 2.5 | 16 17 | 62 | S-10: Very dense, gray, SILT and SAND, trace Gravel, wet (ML) | 3.2 | | | | |
| | | S-11 | 29.0-31.0 | 24 | 12 | 12 13 | 40 | S-11: Hard, brown, SILT, trace Sand, moist (ML) | | | | | |
| | | | | | | | | | | 21 | -7.3 | | |
| | | | | | | | | | | | GLACIAL OUTWASH | | |

- REMARKS**
- 1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 6.5 feet bgs on 6/3/19.
 - 2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
 - 3 - Sample S-7 contained approximately 12 inches of drill wash. Gravel observed in spoon tip.
 - 4 - Drilled through expected boulder between 16 and 17 feet bgs.
 - 5 - Sample S-9 contained approximately 8 inches of drill wash. Gravel observed in spoon tip.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-4
SHEET: 2 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.75
Final Boring Depth (ft.): 151
Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----------|-------------|-----------|-----------|-------------------|---|---|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | | | | 27 12 | | | 0.0 | | | | |
| 62 | | | | | | | | | | | | | |
| 245 | | | | | | | | | | | | | |
| 273 | | | | | | | | | | | | | |
| 200 | S-12 | 34.0-36.0 | 24 | 12 | 22 19 | 46 | S-12: Dense, gray, fine to coarse, SAND , some Silt, little Gravel, wet (SM) | 0.0 | | | | | |
| 131 | | | | | 27 27 | | | | | | | | |
| 170 | | | | | | | | | | | | | |
| 165 | | | | | | | | | | | | | |
| 182 | | | | | | | | | | | | | |
| 137 | S-13 | 39.0-41.0 | 24 | 10.5 | 35 25 | 63 | S-13: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | 0.4 | 6 | | | | |
| | | | | | 38 51 | | | | | | | | |
| 73 | | | | | | | | | | | | | |
| 91 | S-14 | 44.0-46.0 | 24 | 12 | 26 28 | 48 | S-14: Dense, gray, fine SAND and SILT, wet (SM) | 1.6 | | | | | |
| 23 | | | | | 20 24 | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |
| 36 | S-15 | 49.0-51.0 | 24 | 8 | 25 27 | 62 | S-15: Very dense, gray, fine to coarse SAND, little Silt, wet (SM) | 3.4 | | | | | |
| | | | | | 35 28 | | | | | | | | |
| 55 | S-16 | 54.0-56.0 | 24 | 9 | 24 31 | 64 | S-16: Very dense, gray, fine to coarse SAND and SILT, wet (SM) | 2.1 | | | | | |
| | | | | | 33 20 | | | | | | | | |
| 60 | S-17 | 59.0-61.0 | 24 | 16 | 19 13 | 30 | S-17: Dense, gray, fine SAND, trace Silt, wet (SW-SM) | 6.1 | | | | | |

REMARKS
 6 - 5-inch casing driven to 39 feet bgs. Driller proceeded with 4-inch casing.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-4
 SHEET: 3 of 6
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
 Drilling Co.: Geologic Inc.
 Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
 Rig Model: CME-75
 Drilling Method:
 Drive & Wash

Boring Location: See Plan
 Ground Surface Elev. (ft.): 13.75
 Final Boring Depth (ft.): 151
 Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
 V. Datum: NAVD 88

Hammer Type: Automatic Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | | | | 17 13 | | | | | | | |
| 65 | | S-18 | 64.0-66.0 | 24 | 16 | 19 16 20 16 | 36 | S-18: Dense, gray, fine SAND, trace Silt, wet (SW-SM) | 0.0 | | | | |
| 70 | | S-19 | 69.0-71.0 | 24 | 12 | 25 19 15 17 | 34 | S-19: Dense, gray, fine SAND, trace Silt, wet (SW-SM) | 0.0 | | | | |
| 75 | 43 | S-20 | 74.0-76.0 | 24 | 5 | 12 12 22 16 | 34 | S-20: Dense, gray, fine to coarse SAND, some Gravel, little Silt, wet (SM) | 0.0 | | | GLACIAL OUTWASH | |
| 80 | 17 | S-21 | 79.0-81.0 | 24 | 14 | 12 11 14 19 | 25 | S-21: Dense, gray, fine to medium SAND, trace Silt, wet (SW-SM) | 0.0 | | | | |
| 85 | 103 | S-22 | 84.0-86.0 | 24 | 3 | 16 13 14 8 | 27 | S-22: Medium dense, gray, fine to coarse SAND, some Gravel, trace Silt, wet (SW-SM) | 0.0 | 7 | | | |
| 90 | 89 | S-23 | 89.0-91.0 | 24 | 7 | 19 13 | 29 | S-23: Dense, gray, fine to medium SAND, trace Silt, wet | 0.0 | 8 | | | |

REMARKS
 7 - Gravel observed in spoon tip of sample S-22.
 8 - Sample S-23 contained approximately 6 inches of drill wash.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
 PRV-4**

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-4
 SHEET: 4 of 6
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
 Drilling Co.: Geologic Inc.
 Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
 Rig Model: CME-75
 Drilling Method:
 Drive & Wash

Boring Location: See Plan
 Ground Surface Elev. (ft.): 13.75
 Final Boring Depth (ft.): 151
 Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
 V. Datum: NAVD 88

Hammer Type: Automatic Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-------------|-------------|-----------|-----------|-------------------|--|---|-----------|--------|-----------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 56 | | | | | | 16 37 | | (SW-SM) | | | | | |
| 47 | | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | | |
| 141 | | | | | | | | | | | | | |
| 173 | S-24 | 94.0-96.0 | 24 | 14 | 26 23 | 52 | S-24: Very dense, gray, fine to coarse SAND, little Gravel, trace Silt, wet (SW-SM) | | 0.0 | | | | |
| 117 | | | | | 29 25 | | | | | | | | |
| 386 | | | | | | | | | | | | | |
| 503 | | | | | | | | | | | | | |
| 601 | | | | | | | | | 0.0 | | | | |
| 623 | S-25 | 99.0-101.0 | 24 | 14 | 31 28 | 62 | S-25: Very dense, gray, fine to coarse, SAND, little Gravel, trace Silt, wet (SW-SM) | | | 9 | GLACIAL OUTWASH | | |
| 100 | | | | | 34 24 | | | | | | | | |
| 105 | S-26 | 104.0-106.0 | 24 | 0 | 71 51 | 92 | S-26: NO RECOVERY | | 0.0 | 10 | | | |
| | | | | | 41 43 | | | | | | | | |
| 110 | S-27 | 109.0-111.0 | 24 | 24 | 19 21 | 60 | S-27: Top 18": Gray, fine SAND, trace Silt, moist (SP-SM) Bottom 6": Gray, fine SAND, little Silt, wet (SM) | | 0.0 | | 109 | | -95.3 |
| | | | | | 39 68 | | | | | | | | |
| 115 | S-28 | 114.0 | | | | | S-28: NOT OBTAINED | | | 11 | GLACIAL TILL | | |
| | | | | | | | | | | | | | |
| 120 | S-29 | 119.0- | 9 | 8 | 56 100 | R | S-29: Gray, fine to coarse GRAVEL, some Sand, trace Silt, wet | | 0.0 | | | | |

REMARKS
 9 - 4-inch casing driven to 99 feet bgs. Driller proceeded with 3-inch casing.
 10 - Sample S-26 contained approximately 10 inches of drill wash.
 11 - Approximately 4 feet of blowing sands encountered during sampling at 114 feet bgs. Driller added drill mud to the tub and flushed casing three times prior to obtaining sample S-28. Sample not indicative of actual conditions. Driller proceeded with 3-inch casing up to 119 feet bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-4
SHEET: 5 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.75
Final Boring Depth (ft.): 151
Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample No. | Sample | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|------------|-------------|-----------|-----------|--------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | 119.8 | | | 73" | | (GW-GM) | | | | | |
| 125 | | S-30 | 124.0-125.9 | 23 | 18 | 35 28 50 100/5" | 78 | S-30: Very dense, gray, fine to coarse SAND, little Silt, moist (SM) | 0.0 | 12 | | | |
| 130 | | S-31 | 129.0-131.0 | 24 | 5 | 28 23 26 40 | 49 | S-31: Dense, gray, fine SAND, little Silt, trace Gravel, moist (SM) | 0.0 | | | | |
| 135 | | S-32 | 134.0 | | | | | S-32: NOT OBTAINED | | 13 | | GLACIAL TILL | |
| 140 | | S-33 | 139.0-141.0 | 24 | 23 | 10 68 68 78 | 136 | S-33: Very dense, gray, fine SAND and SILT, moist (SM) | 0.0 | | | | |
| 145 | 92 | S-34 | 144.0-146.0 | 24 | 23 | 25 33 48 56 | 81 | S-34: Hard, gray, Clayey SILT, trace fine sand, wet (ML) | 0.0 | | | | |
| 150 | | S-35 | 149.0- | 24 | 13 | 17 15 | 40 | S-35: Hard, gray, SILT, trace fine Sand, wet (ML) | 0.0 | | | | |

REMARKS
12 - Sample S-30 contained approximately 6 inches of drill was. Approximately 25 feet of blowing sands observed.
13 - Casing dropped to approximately 138 feet bgs during flushing of blowing sands within casing. Driller proceeded to obtain sample at 139 feet bgs.

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Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-4
SHEET: 6 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.75
Final Boring Depth (ft.): 151
Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | No. | Sample | | | | Blows (per 6 in.) | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----|-----------|-----------|--|----|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 151.0 | | | | | | 25 | 47 | | | | | 151 | GLACIAL TILL | -137.3 |
| 155 | | | | | | | | | | | | | | |
| 160 | | | | | | | | | | | | | | |
| 165 | | | | | | | | | | | | | | |
| 170 | | | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | | | |
| 180 | | | | | | | | | | | | | | |

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-5
SHEET: 1 of 1
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 7.5
Final Boring Depth (ft.): 28
Date Start - Finish: 7/11/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 6/3/19 | 11:00 | 5 Minutes | 5.3 | N/A |
| 7/11/19 | 12:45 | N/A | 5.8 | 26 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|---|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | |
| | | S-1 | 2.0 | | | | | S-1: Brown, fine to coarse SAND, little Silt, little fine Gravel, dry (SM) | 1 | | | |
| | | S-2 | 3.5 | | | | | S-2: Brown, fine to coarse SAND, trace Silt, trace fine Gravel, dry | 2 | | | |
| 5 | 60 | S-3 | 5.0 | | | | | S-3: Brown, fine to coarse SAND, little Silt, trace fine Gravel, wet (SM) | | | | |
| | 57 | S-4 | 6.0-8.0 | 24 | 8 | 7 8 | 18 | S-4: Medium dense, brown, fine to coarse SAND, some fine Gravel, trace Silt, wet (SW-SM) | | | | |
| | 49 | | | | | 10 10 | | | | | | |
| | 36 | S-5 | 8.0-10.0 | 24 | 18 | 15 7 | 18 | S-5: Medium dense, brown, fine to coarse SAND, little Gravel, little Silt, slight petroleum-like odor, wet (SM) | | | | |
| 10 | 2 | S-6 | 10.0-12.0 | 24 | 9 | 6 15 | 31 | S-6: Dense, brown, fine to coarse GRAVEL and fine to coarse SAND, trace Silt, wet (GW-GM) | | | FILL | |
| | 2 | | | | | 16 24 | | | | | | |
| | 45 | S-7 | 12.0-14.0 | 24 | 14 | 13 15 | 30 | S-7: Dense, brown, fine to coarse SAND, some Silt, little Gravel, wet (SM) | | | | |
| | 108 | | | | | 15 13 | | | | | | |
| 15 | 36 | S-8 | 14.0-16.0 | 24 | 5 | 45 23 | 40 | S-8: Dense, brown, GRAVEL, some Silt, some fine to coarse Sand, wet (GM) | | | | |
| | 86 | | | | | 17 12 | | | | | | |
| | 113 | S-9 | 16.0-18.0 | 24 | 12 | 12 11 | 26 | S-9: Medium dense, brown, fine to coarse SAND, some Silt, little Gravel, wet (SM) | | | | |
| | 102 | | | | | 15 36 | | | | | | |
| | 98 | S-10 | 18.0-20.0 | 24 | 9 | 16 12 | 28 | S-10: Medium dense, brown, SILT, some fine to coarse Sand, trace fine Gravel (wet) | | | | |
| 20 | 106 | | | | | 16 10 | | | | | | |
| | 30 | S-11 | 20.0-22.0 | 24 | 7 | 12 12 | 25 | S-11: Medium dense, brown, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | | | | |
| | 76 | | | | | 13 18 | | | | | | |
| | 105 | S-12 | 22.0-24.0 | 24 | 15 | 59 101 | >100 | S-12: Top 11": Gray/brown, GRAVEL, some fine to coarse Sand, little Silt, wet (GM) | 22 | | -14.5 | |
| | 113 | | | | | 61 62 | | Bottom 4": GRAVEL (GW) | | | | |
| 25 | | S-13 | 24.0-26.0 | 24 | 7 | 12 30 | 48 | S-13: Dense, brown, GRAVEL and fine to coarse SAND, little Silt, wet (GM) | | | GLACIAL OUTWASH | |
| | | | | | | 18 12 | | | | | | |
| | | S-14 | 26.0-28.0 | 24 | 9 | 20 25 | 47 | S-14: Dense, brown, GRAVEL, some fine to coarse Sand, some Silt, wet (GM) | | | | |
| | | | | | | 22 20 | | | 28 | | -20.5 | |
| 30 | | | | | | | | End of exploration at 28 feet | | | | |

REMARKS
1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 5.5 feet bgs on 6/3/19.
2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-5

GZA TEMPLATE TEST BORING - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 9/30/19 11:45 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ



APPENDIX D

SUMMARY OF COMPLETED INVESTIGATIONS (1994 through 2009)



Appendix D

Summary of Previously Completed Investigations (1994 through 2009)
642 Allens Avenue Former Manufactured Gas Plant (MGP)
Providence, Rhode Island

Previous investigations have been performed at the Site by various firms dating back to 1994. These Site investigations have been documented in reports submitted to the Rhode Island Department of Environmental Management (RIDEM). Investigations included extensive drilling, test pitting, soil sampling and groundwater sampling. The following presents a summary of each previously completed investigation effort. For further information related to previous Site investigations, please refer to the reports referenced.

- July 1994 *Site Characterization Report* prepared by Resource Controls Associates, Inc. (RCA) on behalf of the Providence Gas Company (PGC)

In April 1994, RCA was retained by PGC to prepare a *Site Characterization Report* for the 642 Allens Avenue Site. The scope of work implemented entailed Site inspections, historical research, environmental evaluations, regulatory file reviews, local reconnaissance, and interviews with PGC personnel. The Site Inspection focused on the Natural Gas Regulation portion of the Site. RCA summarized the Site history, probable contaminants of concern based on site historical operations, current operations, and the results of a site inspection. RCA recommended further environmental investigation of the Site, including sampling and analyses of environmental media, and evaluation of soils, groundwater, and surface water.

The findings of these investigations were presented in the July 1994 *Site Characterization Report* prepared by RCA on behalf of the PGC which was submitted to RIDEM.

- February 1995 *Summary Report – Phase 1A Field Investigations* prepared by RCA on behalf of the PGC

In August 1994, RCA was retained by PGC to conduct site investigations and prepare a Phase IA Field Characterization Investigation for the 642 Allens Avenue Site. PGC notified RIDEM on May 13, 1994 of the possibility that an historical release may have occurred at the Site that could be subject to RIDEM's Site Remediation Regulations. In August 1994, on the basis of the July 1994 *Site Characterization Report's* findings, RCA submitted to RIDEM, a work plan, titled "Work Plan for Field Characterization Investigations," which contained a scope of work for an environmental quality investigation at the Site. The purpose of the Phase IA Field Characterization was to evaluate the Site for evidence of the potential release of hazardous materials and the impact that such release(s) may present to public health, safety, and the environment. Site characterization activities included a detailed inspection of the Algonquin Gas Co. (predecessor of National Grid LNG, Inc. (NGLNG)) and Independent Cement Co. (predecessor of Holcim US, Inc.) operations on the Site. Environmental site investigation performed included geophysical surveys, monitoring well construction, soil borings, test pits, groundwater elevation monitoring, and sampling of soil, sediment, surface water, and groundwater. A total of 14 monitoring wells were installed, 4 surface water locations were sampled, and 9 surficial soil areas were investigated. Laboratory analyses of Site environmental media confirmed the presence of a variety of chemical species that commonly occur at former manufactured gas facilities. These included: total petroleum hydrocarbons (TPH), poly-aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs) in subsurface soil; TPH and PAHs in sediments; dissolved-phase TPH, PAHs, VOCs, metals, and cyanide in groundwater; metals, cyanide, and poly-chlorinated biphenyls (PCBs) in surficial soil; and metals, VOC, and semi-volatile organic compounds (SVOCs), and cyanide in surface water. No non-aqueous phase liquids (NAPL) was observed in any monitoring wells during the course of the investigation activities. Groundwater data indicated an easterly horizontal direction of groundwater flow, with some tidal influence on groundwater elevations near the shoreline, and little tidal effect in the southern section of the Site. The environmental concerns identified by RCA included occurrences



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of: 1) PCBs in soil near Compressor Building No. 2; 2) metals related to sandblasting around the former Gasholders and the former propane tank area; 3) dissolved cyanide in groundwater at several wells; and 4) petroleum residuals in the north and east portions of the Site. RCA determined that potential human exposures to oil or hazardous materials identified at the Site are limited to on-site workers and/or transient visitors or trespassers. RCA noted that they had found no evidence of an Imminent Hazard at the Site.

The findings of these investigations were presented in the February 1995 *Summary Report – Phase 1A Field Investigations* prepared by RCA on behalf of the PGC which was submitted to RIDEM.

- June 1996 *Summary Report – Phase 1B Field Investigations* prepared by RCA on behalf of the PGC

RCA was retained by PGC to conduct additional site investigations and prepare a *Summary Report – Phase 1B Field Investigations* for the 642 Allens Avenue Site. The *Summary Report – Phase 1B Field Investigations* was a comprehensive report and looked at data collected by RCA during both phases (1A and 1B). The Phase 1A and 1B site investigation activities included a geophysical investigation, site-wide soil gas investigation, a total of forty-one (41) groundwater monitoring wells, seventeen (17) geotechnical test borings, nineteen (19) geoprobe borings, and thirty-eight (38) test pits. An additional thirteen (13) test borings and eight (8) test pits were also been completed to characterize interior conditions of buried structures. Laboratory analyses of environmental media samples from the Site confirmed the presence of a variety of chemical compounds that commonly occur at former MGPs. These included: TPH, PAHs, VOC and metals in soil; TPH and PAHs in sediments; dissolved-phase TPH, PAH, VOC, metals, and cyanide in groundwater; and metals, VOC, PAH, and cyanide in stormwater and subsurface utility pipelines. Light non-aqueous phase liquids (LNAPL) was observed in monitoring wells and on groundwater exposed during test pitting. LNAPL was most prevalent within three distinct areas of the Site: 1) on the northern shoreline near the former relief gasholder (RCA-4); 2) under the southwestern corner of the liquified natural gas (LNG) dike (RCA-26 and RCA-29); and, 3) just west of the former propane building (RCA-21). The petroleum detected was identified by fingerprinting as a mixture of weathered No. 2 fuel oil and coal tar. RCA observed intermittent sheen on the water surface in the cove area of the Site. RCA determined that potential human exposures to oil or hazardous materials identified at the Site are limited to on-site workers and/or transient visitors or trespassers. RCA noted that the potentially significant contaminant migration pathways identified included groundwater transport through the overburden aquifer, and volatilization of contaminants to air. RCA noted that they had found no evidence of an Imminent Hazard at the Site.

The findings of these investigations were presented in the June 1996 *Summary Report – Phase 1B Field Investigations* prepared by RCA on behalf of the PGC which was submitted to RIDEM.

- December 1998 *Remedial Action Work Plan (RAWP)* prepared by Environmental Science Services, Inc. (ESS) on behalf of the PGC

ESS submitted a *Remedial Action Work Plan (RAWP)* to RIDEM in December 1998. The RAWP presented the remedial strategy for the Site which included source removal and placement of engineered caps in select areas of the Site and established Remedial Objectives for the Site. As part of the RAWP, ESS conducted additional subsurface investigation in September 1998 to further evaluate source material present in the former MGP structures located in the upland area adjacent to the cove. ESS documented the results of this investigation in Appendix A – Additional Historic Structure Investigation of the December 1998 RAWP.



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This investigation was conducted in September 1998 and included conducting a series of borings in the following historic structures: the former relief gasholder, former filter, former open separating tank, former open cooling tank, the former open tar tank and the former tar and ammonia pit (**Figure 4B** (*Exploration Location Plan – Western Side of the Site*)).

A total of six additional borings were conducted in the former Relief Gasholder in September 1998, RHB-1, RHB-2, RHB-3, RHB-4, RHB-5, and RHB-6. Each boring was conducted to the concrete base of the structure. Structure contents consisted of fine-to coarse-grained sand and gravel with some cobbles. There was no visible evidence of coal tar-like material in any of the split spoon samples collected. Petroleum-like odors were evident in some of the split spoon soil samples collected, and was more prevalent in split spoon samples collected from the apparent water table depth, along the eastern side of the holder base. Headspace field readings ranged from 1.0 parts per million by volume (ppmv) to 186.0 ppmv. Dark stained soil was visible in the split spoon samples collected from RHB-2 (6 to 8 feet), RHB-4 (10 to 12 feet), and RHB-5 (8 to 10 feet). There were no exceedances of the Remedial Objectives applicable to soil located more than 100 feet from shore. ESS concluded that “the porous nature of concrete and the potential for the concrete to be breached due to its age may account for the apparent groundwater infiltration into the foundation base. Based on this information, it is proposed that the Relief Gas Holder 16 base be maintained intact. Since no analysis was conducted to document compliance with surface soil Remedial Objectives, PGC agrees to maintain the concrete cap as an encapsulation for the sand and gravel within the foundation.” This relief holder relieving platform foundation is currently intact at the Site.

Two borings (NF-1 and NF-2) were completed in the former filter structure, two borings were completed in the former open separating tank (SPT-1 and SPT-2), two borings were completed in the former open cooling tank (CT-1 and CT-2), three additional borings (ST-1, ST-2, and ST-4) were completed in the Tar Pit, and three additional borings (TAP-1, TAP-3, and TAP-4) were completed in the Ammonia Pit. Each boring extended to the base of the concrete structure (4 to 10 feet bgs). Varying levels of petroleum and/or coal tar-like visual and olfactory impacts were observed in each of these structures. The contents of these structures were later excavated, and the structures were then cleaned and backfilled with soil which met the Remedial Objectives as part of the 2002 remedial efforts (refer to **Appendix F** (*Summary of Completed Remedial Actions (1995 through 2002)*)). The content within the structures was removed and transported off-site to an approved facility. **Figure 4A** (*Exploration Location Plan – Eastern Side of the Site*) and **Figure 4B**, are intended to present the location of explorations that have been performed at the Site. These figures are not intended to present explorations in areas that have been fully excavated (i.e., borings/samples no longer representative of existing conditions). As such, these explorations are not presented on **Figure 4A** or **Figure 4B**.

The findings of these investigations were presented in the December 1998 *RAWP* prepared by ESS on behalf of the PGC which was submitted to RIDEM.

- October 1999 *Subsurface Investigation and Proposed Remediation* prepared by ESS on behalf of the PGC

ESS performed fifty-nine (59) soil borings between July 12 and July 15, 1999 using a GeoProbe drill rig that “direct-pushed” 4-foot acetate samplers to a total depth of 10 feet. The explorations were all completed within the limits of the LNG facility in advance of the construction of a new electrical generator and associated buildings. Various samples from the surface soils (0-2 feet bgs), subsurface (2-10 feet bgs) and groundwater were collected for field screening and subsequent analysis. Twelve (12) of the fifty-nine (59) boring locations were completed as micro-wells to collect a groundwater sample. A total of fifty-nine (59) surface soil samples and sixty (60) subsurface soil samples were submitted for analysis of PP-13 metals, barium, total iron, total cyanide via EPA Method 335.3, PCBs via EPA Method 8082A, TPH via EPA Method 8100M, VOCs



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via EPA Method 8260B and SVOCs via EPA Method 8270. A total of twelve (12) groundwater samples were retrieved¹ from the temporary well points for analysis of PP-13 metals, barium, total iron, dissolved cyanide via EPA Method 335.3, VOCs via EPA Method 8260B and SVOCs via EPA Method 8270.

ESS noted that the top 2 feet of soil was observed to consist of fine to medium brown sand and gravel with traces of brick and cinder debris. In general, the subsurface soils were observed to be fine to medium grained brown/gray silty sand and gravel. Several locations had pockets of rust/brown and blue/green colored soils similar to the surface samples. Some soil exhibited a petroleum-like odor just below the observed water table. Soil analytical results were typical of urban fill constituents, with widespread exceedances of the RIDEM Method 1 Industrial Commercial Direct Exposure Criteria (I/C-DEC) and/or GB Leachability Criteria for arsenic and PAHs and more sporadic exceedances of TPH. RIDEM Upper Concentration Limits (UCLs) were not encountered in soil.

Prior to retrieving the groundwater samples, the water level in the wells was determined and the water checked for floating product using oil/water interface probe. Floating product was not encountered by ESS, although sheen was identified on the purged groundwater samples in two locations: 18 and 38. Both locations were proximate to the former tar pit near the former Compressor House No. 1. Groundwater samples were collected as grab samples. Benzene was detected in excess of the RIDEM GB Groundwater Objective (GBGO) in one sample only (38) at a concentration of 1.8 mg/L (compared to the GBGO of 0.14 mg/L).

The findings of these investigations were presented in the October 1999 *Subsurface Investigation and Proposed Remediation Report* prepared by ESS on behalf of the PGC which was submitted to RIDEM.

- November 2002 *Remedial Action Closure Report* prepared by Vanasse Hangen Brustlin, Inc. (VHB) on behalf of the New England Gas Company (NEGC)

VHB submitted a *Remedial Action Closure Report (RACR)* to RIDEM in November 2002. The RACR presented the remedial activities that were completed in portions of the LNG Facility in 2002, which included source removal and installation of engineered caps in select areas of the Site.

In order to minimize the amount of ex-situ soil handling and storage, soils in potential excavation areas were sampled in-situ for waste characterization prior to the start of remedial activities. Test pits were completed in the areas proposed for source removal and samples were collected to characterize the subsurface conditions for waste disposal. Thirty-seven (37) test pits (TP-1 through TP-37) were completed in the LNG area (near the former filters, former open cooling tanks and relief gasholder area) and an additional thirteen (13) test pits (TP- 38 through TP-50) were completed in the former tar and ammonia pit area near former Compressor Building No.1. Samples were submitted for TPH via EPA Method 8100M, RCRA-8 metals, reactive cyanide, reactive sulfide, pH, ignitability, PAHs via EPA Method 8270C, VOCs via EPA Method 8260B, and PCBs via EPA Method 8082A. Soil analytical results were typical of urban fill constituents, with widespread exceedances of the RIDEM Method 1 I/C-DEC and/or GB Leachability Criteria for arsenic and PAHs, and more isolated exceedances of TPH. Several exceedances of the RIDEM UCLs were detected for TPH and naphthalene in soil, however, all of these UCLs were removed as part of the remedial efforts.

¹ The method of collection is unknown, however, it is likely that the samples were collected as grab samples.



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Summary of Previously Completed Investigations (1994 through 2009)
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Samples were collected from test pits advanced in each structure and from a sampling grid to satisfy the disposal facilities sampling requirements. Subsurface samples from test pits were generally collected from 2 feet below the water table. The sampling frequency was approximately one sample per 500 tons of material to be disposed and the samples were analyzed for parameters outlined by the disposal facilities. Sampling results were utilized to guide subsurface soil excavations extents.

As above, **Figure 4A** and **Figure 4B**, are intended to present the location of explorations that have been performed at the Site. These figures are not intended to present explorations in areas that have been fully excavated. As such, many of the pre-characterization test pits are not presented on the **Figure 4A** or **Figure 4B** because they have been fully excavated.

The findings of these investigations were presented in the November 2002 *Remedial Action Closure Report* prepared by VHB on behalf of the NEGC which was submitted to RIDEM.

- April 2003 *Site Investigation Report (SIR)* prepared by VHB on behalf of the NEGC

VHB was retained by NEGC to conduct additional Site investigations and prepare a Site Investigation Report (*SIR*) for the 642 Allens Avenue Site. The *SIR* was a comprehensive report and looked at data collected by VHB and previous consultants, including data collected by ESS in 1999 and 2000, which had not been submitted to RIDEM prior to this *SIR*.

ESS (on behalf of PGC) completed four hundred and thirty-nine (439) geoprobe borings, twenty-two (22) temporary monitoring well points and eighteen (18) test pits. Generally, each geoprobe boring was extended just into the water table (4 to 10 feet bgs). In general, ESS submitted one surface soil sample (0 to 2 feet) and one subsurface (vadose zone) soil sample for analysis from each boring. Surface soil samples were submitted for analysis of SVOCs via EPA Method 8270, TPH via EPA Method 8100M, total cyanide, PP-13 metals, total iron, ammonia (select samples only), VOCs via EPA Method 8260B, and pesticides and PCBs via EPA Method 8082. Subsurface soil samples were submitted for analysis of SVOCs via EPA Method 8270, TPH via EPA Method 8100M, total cyanide, total iron, ammonia (select samples only), VOCs via EPA Method 8260B, and PCBs via EPA Method 8082. Select samples were submitted from the test pits for analysis of SVOCs via EPA Method 8270, TPH via EPA Method 8100M, TPH fingerprint, VOCs via EPA Method 8260B, and PCBs via EPA Method 8082. A grab groundwater sample was submitted from each of the temporary well point for analysis of VOCs via EPA Method 8260B.

VHB (on behalf of the NEGC) installed thirty-eight (38) additional test borings, installed eighteen (18) monitoring well and collected eighteen (18) surface soil samples. Test borings were completed with hollow stem auger drilling techniques. Generally, each boring was extended to a depth of 10-15 feet bgs or refusal. Several borings did not vertically define the extent of impacts. Surface soil samples were submitted for analysis of PAHs via EPA Method 8270C, TPH via EPA Method 8100M (select samples only), VOCs via EPA Method 8260B (select samples only) and select metals (select samples only). Subsurface soil samples were submitted for analysis of PAHs via EPA Method 8270C (select samples only), TPH via EPA Method 8100M (select samples only), and VOCs via EPA Method 8260B (select samples only). VHB collected groundwater samples from the VHB monitoring wells and existing RCA monitoring wells and submitted the samples for analysis of VOCs via EPA Method 8260B. VHB also included NAPL and groundwater gauging results.



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Summary of Previously Completed Investigations (1994 through 2009)
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VHB concluded that “site-wide surficial soil impacts and subsurface soil impacts are scattered throughout the Site, but appears to be more prevalent in the former Structure No. 6 area, areas around the Gas Control Building, and areas proximate to the former Gasholder 18. Groundwater impacts appear to be more prevalent in areas down gradient of the Regulator Area, areas proximate to the former Gasholder 18, and the former Structure No. 6.”

VHB recommended a remedial alternative that is comprised of focused excavation of subsurface soils exceeding RIDEM GB Leachability Criteria (where allowable), groundwater monitoring and passive recovery of NAPL, placement of an Environmental Land Use Restriction (ELUR) on the property and limiting personnel from areas of the Site with surficial soil exceedances. VHB also recommended that a Method 3 Risk Assessment be conducted for the entire Site to address the remaining regulatory exceedances.

The findings of these investigations were presented in the April 2003 *SIR* prepared by VHB on behalf of NEGC which was submitted to RIDEM.

- January 2009 *Oxide Box Waste Summary Memo* prepared by VHB on behalf of the Narragansett Electric Company (TNEC) doing business as (dba) National Grid (herein referred to as National Grid)

VHB was retained by National Grid to conduct additional test pits in the oxide box area and prepare a summary memo of their findings. The summary memo was intended to present the findings of this additional investigation and propose a remedial strategy for the oxide box area portion of the Site.

VHB excavated five (5) additional test pits. Three subsurface soil samples were collected and submitted for waste pre-characterization analysis of SVOCs via EPA Method 8270, TPH via EPA Method 8100M, VOCs via EPA Method 8260B, select metals (select samples only), TCLP lead and benzene via EPA Method 1311, reactivity, corrosivity, and total cyanide.

VHB concluded that the test pit activities indicate that the former oxide box structures were previously demolished. Based upon the findings of VHB and previous investigations conducted in the oxide box area, VHB concluded that the surface soils in the oxide box area are impacted with TPH, metals, and PAHs above the RIDEM I/C DEC; subsurface soils in the oxide box area had isolated exceedances of the RIDEM GB Leachability Criteria and very isolated exceedances of the RIDEM UCLs for naphthalene and TPH (B-08 collected from 1 to 2 feet bgs).

VHB concluded that the preferred remedial alternative in the oxide box area is excavation of all surface soil within the oxide box area to a depth of 1 foot bgs, excavation of subsurface soil that exceeds RIDEM GB Leachability Criteria and UCL, followed by placement of an engineered soil cap over the oxide box area.

The findings of these investigations were presented in the January 2009 *Oxide Box Waste Summary Memo* prepared by VHB on behalf of National Grid which was submitted to RIDEM.



APPENDIX E

SUMMARY OF REGULAR GROUNDWATER MONITORING (2003 through 2022)

Appendix E

Summary of Regular Groundwater Monitoring (2003 through 2022)
642 Allens Avenue Former Manufactured Gas Plant (MGP)
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Vanasse Hangen Brustlin, Inc. (VHB) (on behalf of the New England Gas Company (NEGC)) implemented a groundwater monitoring program at the Site in 2003. The groundwater monitoring program was briefly described in the December 1998 Remedial Action Work Plan (RAWP) submitted to the Rhode Island Department of Environmental Management (RIDEM).

The most significant groundwater impacts (dissolved phase and observations of non-aqueous liquids (NAPLs)) were observed in areas at the Site generally coincident with areas proximate to former MGP operations and subsurface soil impacts. In these locations, benzene, ethylbenzene, and naphthalene were consistently present at concentrations above the GB Groundwater Objective and measurable NAPL had been recorded. Vinyl chloride has also been detected in few Site wells in areas closest to Allens Avenue in excess of the GB Groundwater Objective. Vinyl chloride is not a Site compound of concern and is likely originating upgradient of the Site. No exceedances have been observed in large areas of the Site, including the eastern portions of the Site along the Providence River and the southeastern portion of the Site proximate to the area occupied by Holcim. Results of groundwater monitoring have generally remained consistent at the Site.

The following presents a summary of groundwater monitoring activities at the Site conducted between 2003 and 2021. For further information related to groundwater monitoring, please refer to the reports referenced.

Appendix E

Summary of Regular Groundwater Monitoring (2003 through 2022)
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- Groundwater Monitoring Program (2003 – 2005)

A groundwater monitoring program was implemented by VHB in 2003. The groundwater monitoring program consisted of gauging and sampling all accessible groundwater monitoring wells at the Site. Forty-one (41) monitoring wells were gauged and sampled: twenty four (24) of the monitoring wells located on the western portion of the Site currently occupied by the Natural Gas Regulation facility (RCA-1, RCA-3, RCA-11, RCA-13, RCA-14, RCA-15, RCA-17, RCA-18, RCA-20, RCA-27, VHB-1, VHB-2, VHB-3, VHB-5, VHB-6, VHB-7, VHB-8, VHB-9, VHB-10, VHB-18, VHB-19, VHB-21, VHB-22 and VHB-23), fourteen (14) were located in the Liquefied Natural Gas (LNG) facility (RCA-5, RCA-6, RCA-22, RCA-28, RCA-29, RCA-32, RCA-33, RCA-34, RCA-36, RCA-38, RCA-39, RCA-40, VHB-13 and VHB-20) and three (3) were located in the Former Holcim Area (RCA-37, VHB-11 and VHB-13). The following recovery wells were gauged: ESS RW-1, ESS RW-2, ESS RW-3, ESS RW-4, ESS RW-5, ESS RW-6, CHES RW-1, CHES RW-2, CHES RW-3, CHES RW-4, and CHES RW-5. Absorbent socks were installed (and replaced if needed) in each recovery well with evidence of NAPL.

Prior to sampling, the monitoring wells were gauged for the presence of NAPL using an electronic oil /water-level interface probe. Static water levels were measured to the nearest 0.01-ft relative to the high-point of the top of the poly-vinyl chloride (PVC) riser pipe. Once water levels were measured, purge volumes were calculated for each monitoring well. VHB purged the wells of at least three water volumes using dedicated polyethylene bailers. Wells with any evidence of NAPL were not sampled. The groundwater samples were submitted for analysis of volatile organic compounds (VOCs) via EPA Method 8260B. The following table presents the sampling rounds completed under this monitoring program, including a summary of major observations:

| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|---|--|
| <p style="text-align: center;">December 2005 <i>Groundwater Monitoring Report</i> prepared by VHB on behalf of the NEGC</p> | <p>Monitoring round conducted in September 2003</p> <ul style="list-style-type: none"> • LNAPL: RCA-29 (0.15 feet), RCA-6 (trace¹), RCA-22 (trace), RCA-40 (trace), VHB-1 (trace), VHB-3 (trace), VHB-7 (trace), VHB-10 (trace), VHB-18 (trace), VHB-22 (trace), and VHB-23 (trace) • DNAPL: Non-Detect • Collected and submitted thirty-six (36) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-22, RCA-36, VHB-10, VHB-18, VHB-21, and VHB-22 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: RCA-28, VHB-7, VHB-9, and VHB-21 • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None |

¹ Trace equals less than 0.01 feet

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Summary of Regular Groundwater Monitoring (2003 through 2022)
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| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|-----------|--|
| | <p>Monitoring round conducted in September 2005</p> <ul style="list-style-type: none"> • LNAPL: RCA-40 (0.02 feet), VHB-22 (0.34 feet), ESS RW-4 (0.5 feet), CHES RW-1 (0.1 feet), CHES RW-4 (2 feet), CHES RW-5 (0.5 feet), VHB-3 (trace) and VHB-10 (trace) • DNAPL: ND • Collected and submitted thirty-five (35) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-28, RCA-36, VHB-7, VHB-10, VHB-18, and VHB-21 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: RCA-28, VHB-7, and VHB-21 • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None |

- Groundwater Monitoring Program (2008 – January 2011)

In 2008, VHB altered the groundwater monitoring program. Monitoring wells included in the new sampling program were selected based on their proximity to the Site boundaries, historic detection of NAPL, historic RIDEM GB Groundwater Objective exceedances, and/or proximity to areas recommended for remediation. Seventeen (17) monitoring wells were sampled: one (1) monitoring well in the former Compressed Natural Gas (CNG) Fueling Area (RCA-12), eleven (11) of the monitoring wells located on the western portion of the Site currently occupied by the Natural Gas Regulation facility (RCA-1, RCA-3, RCA-13, VHB-5, VHB-6, VHB-7, VHB-8, VHB-9, VHB-10, VHB-18 and VHB-21), four (4) were located in the LNG facility (RCA-22, RCA-28, RCA-36 and VHB-13) and one (1) was located in the Former Holcim Area (RCA-37). Prior to sampling, the monitoring wells were gauged for the presence of NAPL using an electronic oil/water-level interface probe. If NAPL was observed in a monitoring well, groundwater was not sampled for dissolved phase laboratory analysis protocols. Static water levels were measured to the nearest 0.01-ft relative to the high-point of the top of the PVC riser pipe. Groundwater samples were collected via low-flow sampling protocol. During purging of the wells, groundwater was monitored for temperature, conductivity, dissolved oxygen, pH, oxidation-reduction potential (ORP), and turbidity in an effort to obtain stabilization of the field indicator parameters prior to sampling. Groundwater samples were submitted for analysis of VOCs via EPA Method 8260B. The monitoring program also includes gauging all monitoring wells with historic NAPL detections and recovering NAPL if detected.² The following table presents the sampling rounds completed under this monitoring program, including a summary of major observations:

² Although gauging and recovering wells with historic detections of NAPL was included in monitoring program, it was only conducted during the 2008 event.

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Summary of Regular Groundwater Monitoring (2003 through 2022)
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| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|--|---|
| <p style="text-align: center;">June 2008 <i>Groundwater Monitoring Report – 2008</i> prepared by VHB on behalf of the Narragansett Electric Company (TNEC) doing business as (dba) National Grid (National Grid)</p> | <p>Monitoring round conducted in March 2008</p> <ul style="list-style-type: none"> • Light Non-Aqueous Phase Liquids (LNAPL): RCA-29 (0.30 feet), RCA-40 (0.01 feet), VHB-22 (0.40 feet), CHES RW-4 (0.04 feet), RCA-28 (trace), VHB-7 (trace), VHB-10 (trace), VHB-21 (trace), VHB-23 (trace), CHES RW-1 (trace), CHES RW-2 (trace), and CHES RW-5 (trace) • Dense Non-Aqueous Phase Liquids (DNAPL): ND • Collected and submitted twelve (12) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-22, RCA-36, and VHB-18 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: None • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None • It should be noted that this submittal references groundwater monitoring results collected in 2006. GZA GeoEnvironmental, Inc. (GZA) has not been able to locate a copy of these 2006 results. • VHB oversaw the closure of VHB-19, RCA-18, and RCA-27. |
| <p style="text-align: center;">February 2010 <i>Groundwater Monitoring Report – 2009</i> prepared by GZA on behalf of National Grid</p> | <p>Monitoring round conducted in December 2009</p> <ul style="list-style-type: none"> • LNAPL: VHB-21 (trace) • DNAPL: ND • Collected and submitted five (5) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: VHB-7 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: VHB-7 • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None |
| <p style="text-align: center;">August 2010 <i>Groundwater Monitoring Report – June 2010</i> prepared by GZA on behalf of National Grid</p> | <p>Monitoring round conducted in June 2010</p> <ul style="list-style-type: none"> • LNAPL: VHB-10 (0.01 feet), RCA-1 (trace), VHB-8 (trace), and VHB-21 (trace) • DNAPL: ND • Collected and submitted eight (8) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: None • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: VHB-21 • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None |
| <p style="text-align: center;">July 2011 <i>Groundwater Monitoring Report – January 2011</i> prepared by GZA on behalf of National Grid</p> | <p>Monitoring round conducted in January 2011</p> <ul style="list-style-type: none"> • LNAPL: VHB-10 (trace), RCA-13 (trace), RCA-28 (trace), and VHB-21 (trace) • DNAPL: RCA-3 (trace) • Collected and submitted six (6) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: VHB-7 and RCA-22 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: VHB-7, VHB-21, and RCA-28 • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None |

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- Groundwater Monitoring Program (July 2011 – 2013)

GZA performed a comprehensive well assessment in July 2011 in advance of the August 2011 sampling round. After well assessment and repair activities, thirty seven (37) operable monitoring wells were located on the Site: eighteen (18) monitoring wells (RCA-1, RCA-3, RCA-11, RCA-13, RCA-14, RCA-15, RCA-17, VHB-1, VHB-3, VHB-6, VHB-7, VHB-8, VHB-10, VHB-18, VHB-21, VHB-22, VHB-23 and Unknown PVC (NG)) in the Natural Gas Regulating facility and nineteen (19) monitoring wells (RCA-5, RCA-6, RCA-20, RCA-21, RCA-22, RCA-28, RCA-29, RCA-32, RCA-33, RCA-34, RCA-36, RCA-38, RCA-39, RCA-40, VHB-13, VHB-20, GZA-104A, GZA-201, and GZA-216) in the LNG facility. Eleven (11) recovery wells were located on Site: two (2) (CHES RW-1 and RW-2) in the Natural Gas Regulating facility and nine (9) (CHES RW-3, RW-4, and RW-5 and ESS RW-1, RW-2, RW-3, RW-4, RW-5, and RW-6) in the LNG facility. No monitoring wells or recovery wells were located on the Holcim occupied section of the property.

The groundwater monitoring program was altered in August 2011 based on the findings of the July 2011 well assessment. The groundwater monitoring program consisted of gauging and NAPL recovery (if detected) on a semi-annual basis and groundwater sampling select monitoring wells on an annual basis. These monitoring wells selected to be sampled on annual basis were selected based on aerial coverage and a review of historic data. Fifteen (15) monitoring wells were sampled: ten (10) of the monitoring wells were located on the western portion of the Site currently occupied by the Natural Gas Regulation facility (RCA-1, RCA-3, RCA-11, RCA-13, VHB-3, VHB-6, VHB-7, VHB-8, VHB-10, and VHB-21) and five (5) were located in the LNG facility (RCA-22, RCA-28, RCA-36, RCA-38 and VHB-13). Unlike previous sampling rounds, groundwater samples were collected from wells with evidence of NAPL. Groundwater samples were collected via low-flow sampling protocol. During purging of the wells, groundwater was monitored for temperature, conductivity, dissolved oxygen, pH, ORP, and turbidity in an effort to obtain stabilization of the field indicator parameters prior to sampling. Groundwater samples were submitted for analysis of VOCs via EPA Method 8260B. The following table presents the sampling rounds completed under this monitoring program, including a summary of major observations:

| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|---|--|
| September 2012 <i>Groundwater Monitoring Report – July and August 2011</i> prepared by GZA on behalf of National Grid | Well assessment conducted in July 2011 Monitoring round conducted in August 2011 <ul style="list-style-type: none"> • LNAPL: VHB-3 (ND – trace), VHB-10 (trace – 0.01 feet), VHB-22 (ND to 0.01 feet), VHB-23 (0.01 – 0.05 feet), RCA-29 (trace – 0.08 feet), CHES RW-4 (0.02 – 0.03 feet) and RCA-21 (2.94 – 3.58 feet) • DNAPL: RCA-3 (trace) • Collected and submitted fifteen (15) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-22 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: VHB-7, VHB-21, and RCA-28 • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None |

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| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|--|--|
| <p style="text-align: center;">August 2013 <i>Groundwater Monitoring Report – 2012</i> prepared by GZA on behalf of National Grid</p> | <p>Groundwater and NAPL Gauging and NAPL Recovery round conducted in February 2012 Groundwater and NAPL Gauging, NAPL Recovery and Groundwater Sampling round conducted in July 2012 Sheen Observations and LNAPL Gauging and Recovery of RCA-21 conducted monthly throughout 2012</p> <ul style="list-style-type: none"> • LNAPL: VHB-10 (trace – 0.02 feet), VHB-21 (ND – 0.01 feet), VHB-22 (trace – 0.04 feet), VHB-23 (ND – trace), CHES RW-2 (ND – trace), RCA-21 (0.75 – 2.79 feet), RCA-29 (trace – 0.11 feet), RCA-40 (trace) and CHES RW-4 (0.02 – 0.03 feet) • DNAPL: RCA-3 (trace) • Collected and submitted fifteen (15) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-22, VHB-10, and VHB-21 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: VHB-7, VHB-21, and RCA-28 • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • GZA gauged and recovered LNAPL from RCA-21 on a weekly basis for one month during February and March and then a monthly basis during the rest of 2012. Initially, the thickness of LNAPL in RCA-21 was 2.79 feet. While RCA-21 was being recovered every week, the thickness of LNAPL decreased to approximately 1 foot. During monthly gauging and recovery, the thickness of LNAPL has been detected steadily at thickness ranging from 1.4 to 1.89 ft. During 2012, GZA recovered approximately 19 gallons of a LNAPL/groundwater mixture utilizing a peristaltic pump from RCA-21. • GZA recovered LNAPL from RCA-29 utilizing a peristaltic pump in July 2012, with less than 0.1 gallon of a LNAPL/groundwater mixture recovered. |
| <p style="text-align: center;">September 2014 <i>Groundwater Monitoring Report – 2013</i> prepared by GZA on behalf of National Grid</p> | <p>Groundwater and NAPL Gauging and NAPL Recovery round conducted in February 2013 Groundwater and NAPL Gauging, NAPL Recovery and Groundwater Sampling round conducted in November 2013 Sheen Observations and LNAPL Gauging and Recovery of RCA-21 conducted monthly throughout 2013</p> <ul style="list-style-type: none"> • LNAPL: RCA-21 (0.07 – 1.91 feet), VHB-10 (ND – 0.01 feet), VHB-21 (ND – trace), VHB-22 (ND – 0.01 feet), VHB-23 (ND – 0.01 feet), CHES RW-2 (ND – trace), RCA-29 (ND – trace), RCA-40 (ND – trace) and CHES RW-4 (trace – 0.01 feet) • DNAPL: RCA-3 (trace) • Collected and submitted fifteen (15) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-22, VHB-10, and VHB-21 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: VHB-7, VHB-21, and RCA-28 • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • During the monthly gauging and recovery events, the thickness of LNAPL in 2013 has ranged from 0.07 to 1.91 feet. The current recovery rate of LNAPL in RCA-21 is estimated to be on the order of 3 to 5 days. During 2013, GZA recovered approximately 11 gallons of a LNAPL/groundwater mixture utilizing a peristaltic pump from RCA-21. |

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Summary of Regular Groundwater Monitoring (2003 through 2022)
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- Comprehensive Groundwater Monitoring Activities – 2014

The groundwater monitoring program was altered in 2014 because additional site investigations were performed at the Site. The groundwater monitoring program consisted of gauging and NAPL recovery (if detected) in June/July 2014 and October 2014 and groundwater sampling monitoring wells in June/July 2014, at least monthly sheen observations in the cove and monthly LNAPL gauging and recovery results from RCA-21/RW-1³. These monitoring wells selected to be sampled were selected based on aerial coverage, to supplement historic data for the Site Investigation Report (SIR) Addendum and a review of historic data. In addition, all monitoring wells that were installed in 2014 as part of site investigation activities were sampled. Forty (40) monitoring wells were sampled: four (4) monitoring wells were located in Former CNG Fueling Station near Allens Avenue (GZ-301D, GZ-302S, GZ-302D and RCA-12R), twenty-five (25) monitoring wells were located on the western portion of the Site currently occupied by the Natural Gas Regulation facility (GZ-303S, GZ-303D, GZ-304D, GZ-305S, GZ-306, GZ-307S, GZ-308S, GZ-309D, GZ-311D, GZ-312S, GZ-312D, GZ-313D, GZ-318D, GZ-320D, RCA-1, RCA-3, RCA-11, RCA-13, VHB-1, VHB-3, VHB-6, VHB-7, VHB-8R, VHB-10 and VHB-21) and eleven (11) were located in the LNG facility (GZ-314S, GZ-314D, GZ-315D, GZ-319D, RCA-5, RCA-22, RCA-28, RCA-36, RCA-38, VHB-13 and VHB-20). Groundwater samples were collected via low-flow sampling protocol. During purging of the wells, groundwater was monitored for temperature, conductivity, dissolved oxygen, pH, ORP, and turbidity in an effort to obtain stabilization of the field indicator parameters prior to sampling. Groundwater samples were submitted for analysis of VOCs via EPA Method 8260B. The following table presents the sampling data completed under this monitoring program, including a summary of major observations:

³ RCA-21 was replaced with RW-1 during the 2014 Site investigation activities.

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| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|---|--|
| <p>January 2021 <i>Groundwater Monitoring Report – 2014 through 2017</i> prepared by GZA on behalf of National Grid</p> | <p>Groundwater and NAPL Gauging, NAPL Recovery and Groundwater Sampling conducted in June and July 2014</p> <p>Groundwater and NAPL Gauging and NAPL Recovery round conducted in October 2014</p> <p>Sheen Observations and LNAPL Gauging and Recovery of RCA-21 / RW-1 conducted monthly throughout 2014</p> <ul style="list-style-type: none"> • LNAPL: VHB-10 (ND - trace), VHB-21 (ND - 0.08 feet), VHB-22 (trace - 0.04 feet), VHB-23 (ND - 0.03 feet), RCA-21 (0.58 to 1.34 feet), RCA-29 (0.08 - 0.17 feet), CHES RW-4 (ND - trace), ESS RW-2 (ND - trace) and RW-1 (trace - 0.02 feet) • DNAPL: RCA-3 (trace) • Collected and submitted forty (40) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-22, GZ-314S, GZ-314D, GZ-315D, GZ-318D and RCA-36 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: VHB-21, GZ-318D, RCA-28, GZ-314S, GZ-314D and GZ-315D • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: RCA-12R • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • During the monthly gauging and recovery events in RCA-21 in 2014 prior to Site investigation activities, the thickness of LNAPL in 2014 has ranged from 0.58 to 1.34 feet. RCA-21 was replaced with RW-1 during 2014 Site investigation activities. The LNAPL thickness in RW-1 ranged from trace to 0.02 feet. During 2014, GZA recovered approximately 11 gallons of a LNAPL/groundwater mixture utilizing a peristaltic pump from RCA-21. • GZA recovered LNAPL from RCA-29 in June 2014, with less than 0.1 gallon of a LNAPL/groundwater mixture recovered. |

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Summary of Regular Groundwater Monitoring (2003 through 2022)
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- Groundwater Monitoring Program (2015 – 2016)

The groundwater monitoring program was altered in 2014 for calendar years 2015 and 2016 because additional site investigations were performed at the Site. The groundwater monitoring program consisted of gauging and NAPL recovery (if detected) on a semi-annual basis, groundwater sampling select monitoring wells on an annual basis, at least monthly sheen observations in the cove and monthly LNAPL gauging and recovery results from RCA-21/RW-1. Twenty one (21) monitoring wells were sampled: two (2) monitoring wells were located in Former CNG Fueling Station near Allens Avenue (GZ-301D and RCA-12R), twelve (12) monitoring wells were located on the western portion of the Site currently occupied by the Natural Gas Regulation facility (GZ-304D, GZ-309D, RCA-1, RCA-3, RCA-11, VHB-1, VHB-3, VHB-6, VHB-7, VHB-8R, VHB-10 and VHB-21) and seven (7) were located in the LNG facility (GZ-314S, GZ-314D, RCA-22, RCA-28, RCA-36, RCA-38 and VHB-13). Groundwater samples were collected via low-flow sampling protocol. During purging of the wells, groundwater was monitored for temperature, conductivity, dissolved oxygen, pH, ORP, and turbidity in an effort to obtain stabilization of the field indicator parameters prior to sampling. Groundwater samples were submitted for analysis of VOCs via EPA Method 8260B. In addition, in advance of upcoming facility projects that were started in Fall of 2016, forty-four (44) wells were decommissioned in June 2016: RCA-3, RCA-5, RCA-7, RCA-11, RCA-13, RCA-14, RCA-20, RCA-29, RCA-32, RCA-33, RCA-38, RCA-40, VHB-3, VHB-6, VHB-7, VHB-8R, VHB-10, VHB-13, VHB-18, VHB-21, VHB-22, VHB-23, CHES RW-1, CHES RW-2, CHES RW-3, CHES RW-4, CHES RW-5, RW-1, ESS RW-1, ESS RW-2, U-1, GZ-204, GZ-216, GZ-311D, GZ-312D, GZ-312S, GZ-313D, GZ-314D, GZ-314S, GZ-315D, GZ-318D, GZ-320D, GZ-401, and GZ-403. The following table presents the sampling rounds completed under this monitoring program, including a summary of major observations:

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| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|---|---|
| <p>January 2021 <i>Groundwater Monitoring Report – 2014 through 2017</i> prepared by GZA on behalf of National Grid</p> | <p>Groundwater and NAPL Gauging, NAPL Recovery and Groundwater Sampling conducted in April 2015 Groundwater and NAPL Gauging and NAPL Recovery round conducted in October 2015 Sheen Observations and LNAPL Gauging of RW-1 conducted monthly throughout 2015</p> <ul style="list-style-type: none"> • LNAPL: VHB-10 (ND - trace), VHB-21 (trace - 0.01 feet), VHB-22 (0.01 - 0.03 feet), RCA-29 (0.02 - 0.10 feet), RCA-40 (trace - 0.04 feet), CHES RW-3 (ND - trace), CHES RW-4 (ND - trace), CHES RW-5 (ND - 0.01 feet), and RW-1 (trace) • DNAPL: RCA-3 (trace) • Collected and submitted twenty-one (21) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: VHB-10, VHB-21, RCA-22, GZ-314S and GZ-314D • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: VHB-7, RCA-28, VHB-21, GZ-314S and GZ-314D • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: GZ-314S • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: GZ-301D and RCA-1 • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • LNAPL was detected in trace thicknesses only in RW-1 during 2015. No NAPL recovery was attempted of RW-1 during 2015. • GZA recovered LNAPL utilizing a peristaltic pump from RCA-29 in October 2015, with less than 0.1 gallon of a LNAPL/groundwater mixture recovered. |
| | <p>Groundwater and NAPL Gauging, NAPL Recovery and Groundwater Sampling conducted in May 2016 Groundwater and NAPL Gauging and NAPL Recovery round conducted in October 2016 Sheen Observations and LNAPL Gauging of RW-1 conducted monthly between January and May 2016 and LNAPL Gauging of GZ-307S conducted monthly between May 2016 and December 2016</p> <ul style="list-style-type: none"> • LNAPL: VHB-21 (0.01 feet), GZ-307S (0.04 - 0.33 feet), RCA-29 (0.01 feet), RCA-40 (0.02 feet), ESS RW-1 (trace) and RW-1 (trace) • DNAPL: RCA-3 (trace) • Collected and submitted twenty-one (21) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: VHB-21, RCA-22, GZ-314S and GZ-314D • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: RCA-28, VHB-21 and GZ-314S • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: GZ-314S • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: RCA-1 and RCA-12R • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • LNAPL was detected in trace thicknesses only in RW-1 during 2016. No NAPL recovery was attempted of RW-1 during 2015. RW-1 was decommissioned in June 2016. • LNAPL was detected at 0.01 feet in thickness in RCA-29 during 2016. No NAPL recovery was attempted of RCA-29 during 2016. RCA-29 was decommissioned in June 2016. • LNAPL was detected in thicknesses ranging from 0.04 to 0.33 feet in GZ-307S during 2016. No NAPL recovery was attempted of GZ-307S during 2016. |

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- Groundwater Monitoring Program (2017-2020)

The groundwater monitoring program was altered for calendar years 2017, 2018, 2019 and 2020 because of the monitoring well decommissioning activities conducted in advance of facility projects. The groundwater monitoring program consisted of gauging and NAPL recovery (if detected) on a semi-annual basis, groundwater sampling select monitoring wells on an annual basis, at least monthly sheen observations in the cove and monthly LNAPL gauging and recovery results of select monitoring wells. Twelve (12) monitoring wells were sampled: two (2) monitoring wells were located in Former CNG Fueling Station near Allens Avenue (GZ-301D and RCA-12R), five (5) monitoring wells were located on the western portion of the Site currently occupied by the Natural Gas Regulation facility (RCA-1, RCA-15, VHB-1, GZ-304D and GZ-309D) and five (5) were located in the LNG facility (RCA-22/RCA-31⁴, RCA-36, VHB-20, GZA-201 and GZ-319D). Groundwater samples were collected via low-flow sampling protocol. During purging of the wells, groundwater was monitored for temperature, conductivity, dissolved oxygen, pH, ORP, and turbidity in an effort to obtain stabilization of the field indicator parameters prior to sampling. Groundwater samples were submitted for analysis of VOCs via EPA Method 8260B. The following table presents the sampling rounds completed under this monitoring program, including a summary of major observations:

| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|---|---|
| <p style="text-align: center;">January 2021 <i>Groundwater Monitoring Report – 2014 through 2017</i> prepared by GZA on behalf of National Grid</p> | <p>Groundwater and NAPL Gauging and Groundwater Sampling round conducted in May 2017 Sheen Observations conducted monthly throughout 2017</p> <ul style="list-style-type: none"> • LNAPL: CHES RW-A (0.09 - 1.02 feet) and GZ-307S (0.02 feet) • DNAPL: Not Detected • Collected and submitted eleven (11) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-22 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: None • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: RCA-1 • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • CHES RW-A was installed in September 2017 during a facility project where LNAPL was detected in an excavation. LNAPL was detected in the well at thicknesses ranging from 0.09 to 1.02 feet. LNAPL/groundwater mixture recovery was performed at CHES RW-A by CHES under the oversight of GZA utilizing a vacuum truck. Approximately 1,600 gallons of a LNAPL/groundwater mixture was recovered during 2017. • Note that VHB-1 was unable to be sampled during 2017. |

⁴ Note that RCA-31 was sampled instead of RCA-22 during 2019 and 2020 because of traffic safety concerns in the vicinity of RCA-22.

Appendix E

Summary of Regular Groundwater Monitoring (2003 through 2022)
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| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|--|---|
| <p>January 2021 <i>Groundwater Monitoring Report – 2018</i> prepared by GZA on behalf of National Grid</p> | <p>Groundwater and NAPL Gauging and Groundwater Sampling round conducted in March 2018 Groundwater and NAPL Gauging round conducted in November 2018 Monthly gauging and recovery of CHES RW-A and GZ-307S through 2018 Sheen Observations conducted monthly throughout 2018</p> <ul style="list-style-type: none"> • LNAPL: RW-A (0.05 - 1.56 feet) and GZ-307S (trace - 1.00 foot) • DNAPL: Not Detected • Collected and submitted twelve (12) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-22 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: None • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: RCA-1 • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • LNAPL/groundwater mixture recovery was performed at CHES RW-A by GZA utilizing a peristaltic pump. Approximately 115 gallons of a LNAPL/groundwater mixture was recovered during 2018. CHES RW-A was decommissioned in Fall 2018 in advance of a gas line installation. • LNAPL/groundwater mixture recovery was performed at GZ-307S by GZA utilizing a peristaltic pump. Approximately 1 gallon of a LNAPL/groundwater mixture was recovered during 2018. |
| <p>January 2021 <i>Groundwater Monitoring Report – 2019</i> prepared by GZA on behalf of National Grid</p> | <p>Groundwater and NAPL Gauging and Groundwater Sampling round conducted in June 2019 Groundwater and NAPL Gauging round conducted in November 2019 Monthly gauging of GZ-307S through 2019 Sheen Observations conducted monthly throughout 2019</p> <ul style="list-style-type: none"> • LNAPL: GZ-307S (trace - 0.13 feet) • DNAPL: Not Detected • Collected and submitted twelve (12) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: None • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: None • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • Two (2) monitoring wells were decommissioned during 2019: E55 and RCA-39. • Roadboxes / standpipes were replaced for eight (8) monitoring wells during 2019: RCA-1, GZ-301S, GZ-302S, GZ-302D, GZ-303S, GZ-303D, RCA-12R and RCA-17. • Two (2) monitoring wells were developed during 2019 to remove fines that were damaged during a facility project at the Site: RCA-6 and RCA-36. • NAPL recovery was not conducted during 2019 from GZ-307S because of traffic safety concerns in the area. |

Appendix E

Summary of Regular Groundwater Monitoring (2003 through 2022)
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| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|---|--|
| <p>February 2021 <i>Groundwater Monitoring Report – 2020</i> prepared by GZA on behalf of National Grid</p> | <p>Groundwater and NAPL Gauging round conducted in June 2020 Groundwater and NAPL Gauging and Groundwater Sampling round conducted in November 2020 Monthly gauging of GZ-307S through 2020 Sheen Observations conducted monthly throughout 2020</p> <ul style="list-style-type: none"> • LNAPL: GZ-307S (trace - 0.01 feet) • DNAPL: Not Detected • Collected and submitted twelve (12) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: None • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: None • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • NAPL recovery was not conducted during 2020 from GZ-307S because of traffic safety concerns in the area. |

- Groundwater Monitoring Program (2021 through 2022)

The groundwater monitoring program was altered for calendar year 2021 because five (5) additional monitoring wells were installed in September 2021 in the Former Gasholder Area at the Site. The groundwater monitoring program consisted of gauging and NAPL recovery (if detected) on a semi-annual basis, groundwater sampling select monitoring wells on an annual basis, at least monthly sheen observations in the cove and monthly LNAPL gauging and recovery results of select monitoring wells. Seventeen (17) monitoring wells were sampled: two (2) monitoring wells were located in Former CNG Fueling Station near Allens Avenue (GZ-301D and RCA-12R), five (5) monitoring wells were located on the western portion of the Site currently occupied by the Natural Gas Regulation facility (RCA-1, RCA-15, VHB-1, GZ-304D and GZ-309D), four (4)⁵ of the new monitoring wells installed in September 2021 (GZ-500S, GZ-500D, GZ-501S and GZ-502S) and five (5) were located in the LNG facility (RCA-22/RCA-31, RCA-36, VHB-20, GZA-201 and GZ-319D). Groundwater samples were collected via low-flow sampling protocol. During purging of the wells, groundwater was monitored for temperature, conductivity, dissolved oxygen, pH, ORP, and turbidity in an effort to obtain stabilization of the field indicator parameters prior to sampling. Groundwater samples were submitted for analysis of VOCs via EPA Method 8260B. The following table presents the sampling rounds completed under this monitoring program, including a summary of major observations:

⁵ Note that GZ-503S did not have enough water present to be able to groundwater sample.

Appendix E

Summary of Regular Groundwater Monitoring (2003 through 2022)
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| Submittal | Groundwater Monitoring Activities Summarized in Submittal |
|--|---|
| <p style="text-align: center;"><i>September 2022 Groundwater Monitoring Report – 2021 prepared by GZA on behalf of Rhode Island Energy</i></p> | <p>Groundwater and NAPL Gauging round conducted in June 2021 Groundwater and NAPL Gauging and Groundwater Sampling round conducted in November 2021 Sheen Observations conducted monthly throughout 2021</p> <ul style="list-style-type: none"> • LNAPL: GZ-307S (non-detect to 0.03 feet) • DNAPL: Not Detected • Collected and submitted seventeen (17) samples for VOCs via EPA Method 8260B • Exceedance of the RIDEM GB Groundwater Objectives for benzene: RCA-22 • Exceedance of the RIDEM GB Groundwater Objectives for naphthalene: None • Exceedance of the RIDEM GB Groundwater Objectives for ethylbenzene: None • Exceedance of the RIDEM GB Groundwater Objective for vinyl chloride: None • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. • Five (5) new monitoring wells were installed and developed during 2021 (GZ-500S, GZ-500D, GZ-501S, GZ-502S and GZ-503S). |
| <p style="text-align: center;"><i>June 2023 Groundwater Monitoring Report – 2022 Prepared by GZA on Behalf of Rhode Island Energy</i></p> | <p>Groundwater and NAPL Gauging round conducted in June 2022 Groundwater and NAPL Gauging and Groundwater Sampling round conducted in November 2022 Sheen Observations conducted monthly throughout 2022</p> <ul style="list-style-type: none"> • LNAPL: GZ-307S (non-detect to 0.01 feet) • DNAPL: Not Detected • Collected and submitted sixteen (16) samples for VOCs via EPA Method 8260B • No exceedances of the GB Groundwater Objectives during the 2022 monitoring period. • Sheens were observed in areas consistent with historic observations, primarily in the cove to the northwestern portion of the Site. More significant sheens have generally been observed at mid- or low-tide only and generally consisted of bright spots and bands. |



APPENDIX F

SUMMARY OF COMPLETED REMEDIAL ACTIONS (1995 through 2002)



Appendix F

Summary of Completed Remedial Actions (1995 through 2002) 642 Allens Avenue Former Manufactured Gas Plant (MGP) Providence, Rhode Island

Several remedial actions have been completed at the Site and these activities have been documented in reports previously submitted to the Rhode Island Department of Environmental Management (RIDEM). **Figure 6** (*Completed Remedial Activities (1995 to 2020)*) depicts the areas of the Site where remedial activities have been performed and **Figure 7** (*Existing Engineered Controls*) presents the location of installed RIDEM-approved engineered caps (or equivalent). Remedial activities conducted between 1998 and 2002 were completed consistent with the December 1998 RIDEM-approved Remedial Action Work Plan (RAWP) or subsequent modifications. The following presents a summary of each completed remedial activity. For further information, please refer to the reports referenced below.

- February 1995 *Remedial Action Report for Condensate Tank Closure* prepared by Resource Controls Associates, Inc. (RCA) on behalf of the Providence Gas Company (PGC)

As shown on **Figure 4A** (*Exploration Location Plan – Eastern Side of the Site*), Compressor Building No.2 is located on the south-central portion of the Site, north of the Liquefied Natural Gas (LNG) facility and east of the former gasholders. Condensation from the gas handling systems, which contains small amounts of compressor oil was collected and stored in two 10,000-gallon concrete underground storage tanks (USTs) in the building. Initial Site investigations previously performed by RCA indicated that these USTs collectively contained approximately 4,600 gallons of condensate and oil. Poly-chlorinated biphenyls (PCBs) were detected at concentrations up to 280 parts per million (ppm) in these oils.

The completed remedial activities included the closure of two 10,000-gallon USTs formerly used for the accumulation of PCB-impacted oil and water, and limited soil excavation, in compliance with RIDEM-approved closure plans. Soils containing PCBs in excess of 50 ppm were removed from the UST area under Compressor Building No.2, and soils containing PCB concentrations greater than 25 ppm were removed from the vicinity of the exterior remote fill pipes. A total of 25 tons of PCB-impacted soil and debris were shipped for off-Site disposal at Chemical Waste Management facility in Model City, New York. RIDEM issued a Certificate of Closure on December 12, 1995.

The remedial action was documented in the October 1995 *Remedial Action Report for Condensate Tank Closure* prepared by RCA on behalf of PGC which was submitted to RIDEM.

- October 1995 *UST Closure Assessment* prepared by Hoffman Engineering, Inc. (HEI) on behalf of PGC

As shown on **Figure 4A**, two former USTs and a pump dispenser were located in the vicinity of former gasholders Nos. 18 and 21 and the former Holder Heating Building. Each UST was 4,000 gallons in capacity and reportedly stored diesel fuel. UST removal activities were performed on October 5, 1995 and were witnessed by RIDEM. The contractor removed both tanks for disposal off-Site. Both tanks were observed to be in good condition. The contractor excavated approximately two (2) cubic yards (CY) of soil from the area underneath the pump dispenser, until photo-ionization detector (PID) readings were non-detect. RIDEM issued a Certificate of Closure on December 11, 1995.

The remedial action was documented in the October 1995 *UST Closure Assessment* prepared by HEI on behalf of the PGC which was submitted to RIDEM.



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- June 1996 *Remedial Action Report for Short Term Measure Performed at the Providence Gas Company* prepared by RCA on behalf of PGC

RCA conducted a short term remedial action in the LNG area in April 1996. A ten-inch diameter pipe was exposed at the northeast corner of the Site proximate to the former open cooling tank during implementation of their test pit program in February and March 1996. It appeared that the pipe may have been acting as a preferential pathway for potential oil migration. As such, the most appropriate action appeared to be removal of the pipe, where accessible, and sealing the remainder of the pipe with concrete slurry.

Approximately 85 feet of a 10-inch diameter steel pipe was removed from a point where it entered the former open cooling tank, south along to the former open separating tank to where it was ultimately sealed with a concrete slurry proximate to a gas line located under the northern access road. During excavations along the edge of the former open separating tank, a second 10-inch diameter pipe was discovered that was also oriented in a north to south direction. Sections of this pipe were also removed with the remaining sections sealed with a concrete slurry.

The deeper portions of the trenches that were excavated during the pipe removal were backfilled with Site. Clean fill was used to bring the trench areas back to grade.¹

The remedial action was documented in the June 1996 *Remedial Action Report for Short Term Measure Performed at the Providence Gas Company* prepared by RCA on behalf of PGC which was submitted to RIDEM.

- September 1998 *UST Closure Assessment* prepared by HEI on behalf of PGC

As shown on **Figure 4B** (*Exploration Location Plan – Western Side of the Site*), a former UST was located inside former Compressor House No.2. The UST was approximately 2,500 gallons in capacity and reportedly stored diesel fuel utilized to power compressors located in the building. On August 11, 1998, the UST was pumped out and filled in place using concrete flow fill. One (1) drum of sludge was removed from the bottom of the tank and disposed of off-Site at United Oil Recovery Inc., in Meriden, Connecticut. The tank was observed to be in good condition. All piping was removed from the tank. No visual or olfactory evidence of impacts were noted. A groundwater sample was collected from the two nearby monitoring wells and submitted for analysis of total petroleum hydrocarbons (TPH) and poly-aromatic hydrocarbons (PAHs). PAHs were not detected in either sample. TPH was detected at concentrations of 200 and 350 µg/L. RIDEM issued a Certificate of Closure on January 12, 1999.

The remedial action was documented in the October 1995 *UST Closure Assessment* prepared by HEI on behalf of the PGC which was submitted to RIDEM.

- October 1999 *Subsurface Investigation and Proposed Remediation* prepared by Environmental Science Services, Inc. (ESS) on behalf of PGC

In preparation for a proposed generator construction project at the LNG facility, ESS conducted a subsurface investigation in July 1999 and subsequent remedial actions in August 1999. The remedial action was completed in accordance with protocols set forth in the December 1998 RAWP. A 30-foot square grid approximately 330 feet long by 150 feet wide was established north of the storage building and south of the dike, resulting in the completion of fifty-

¹ It should be noted that the soil and piping was later removed during the remedial activities conducted by Clean Harbors Environmental Services, Inc. (CHES) and Vanasse Hangen Brustlin, Inc. (VHB) during the summer of 2002.



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seven (57) borings with twelve (12) borings completed with temporary groundwater sampling points. Investigation performed under this effort is presented in Section 2.8 and **Appendix D** (*Summary of Previously Completed Investigations (1994 through 2009)*).

Based on laboratory analysis of the soil samples, a remedy was proposed and implemented consisting of focused excavation, off-site transport and disposal of excavated soil, and installation of engineered caps. Surficial soil removals were conducted to excavate 1 foot of impacted soil in areas that were not proposed to receive 2 feet of clean fill, backfilled with clean material, and paved with two, 4-inch lifts of asphalt. The remaining areas were not excavated, but were encapsulated with 2 feet of clean fill or asphalt or concrete.² ESS noted that the backfill analytical results conformed to the RIDEM-approved Remedial Objectives established in the RAWP. However, the analytical data for the backfill used in a portion of the generator area reveals that it was impacted with arsenic and PAHs that exceed the RIDEM Method 1 Residential Direct Exposure Criteria (RDEC). According to the 1999 *Subsurface Investigation and Proposed Remediation report*, ESS discussed the presence of these compounds with RIDEM. Since this backfill complied with the RAWP Remedial Objectives, and the area would eventually be subject to an ELUR, RIDEM reportedly indicated that they would allow the backfill to remain.

Upon completion of excavation, and prior to backfilling the area, ESS performed verification sampling across the remediated area. Verification sampling was performed along the western, southern and eastern sides of the excavation at 15-foot intervals between sample points where previously-impacted soils were identified. The verification samples were only analyzed for the constituent that exceeded the objectives in the original investigation. Several verification samples were detected in excess of the RIDEM-approved Remedial Objectives for arsenic and PAHs, however, additional excavation was not required because the area was finished with a RIDEM compliant engineered cap.

The remedial action was documented in the October 1999 *Subsurface Investigation and Proposed Remediation* prepared by ESS on behalf of PGC which was submitted to RIDEM.

- May 2001 *Compressor Building No. 2 PCB Remediation Summary Letter* prepared by ESS on behalf of PGC

In August 2000, CHES hand excavated an area of PCB-impacted soils located between the existing paved access road and Compressor Building No. 2 under the supervision of PGC. The overall extent of excavation was limited due to the presence of active natural gas distribution lines. The horizontal extent of the excavation was the asphalt road to the north, concrete sidewalk to the east, and estimated locations of unaffected soil to the west and south. The vertical extent of the excavation was the top of the groundwater table, encountered at approximately eight (8) feet below grade. According to CHES work order slips, approximately 17 cubic yards of soil was excavated.

On August 3, 2000, ESS personnel collected confirmatory samples from the sidewalls and bottom of the excavation. According to PGC, after the laboratory analytical results were reported, it was realized that additional samples needed to be collected to determine an upper confidence limit. ESS collected these additional bottom samples on August 23, 2000. Based on the results of confirmatory bottom samples, additional soil excavations were completed by CHES in two adjacent grids. Soil was removed approximately one foot into the groundwater table. Approximately an additional 17 cubic yards of soil

² During this remedial work, an ethylene glycol spill occurred at the West Compressor Area on August 25, 1999. Notification was made to RIDEM on August 26, 1999. Approximately 40 CY of soil was excavated, the area was backfilled and the excavated soil was reportedly disposed of properly.



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was removed from the excavation. Total PCBs were detected in the bottom samples collected one foot below the water table at concentrations ranging from non-detect (ND) to 26.15 mg/kg.

The excavated soil was loaded onto three licensed vehicles on September 14, 2000 and transported to the licensed Chemical Waste Management facility in Model City, New York on Hazardous Waste manifests NYB7886376, NYB7886385, and NYB7886403.

The excavation was backfilled with soil in compliance with the Remedial Objectives approved by RIDEM in the December 1998 RAWP.

The remedial action was documented in the May 3, 2001 *Compressor Building No. 2 PCB Remediation Summary Letter* prepared by ESS on behalf of PGC which was submitted to RIDEM.

- January 2001 *Remediation of the New Regulator Area*³

In 1999, during the remedial activities approved by RIDEM in the 1998 RAWP, PGC planned to construct natural gas related equipment and piping in the area designated as the Natural Gas Regulation Facility. This gas regulator station is located north of the former Meter House and contains various sizes of natural gas pipes both below and above ground. The equipment upgrade design included excavating trenches for new in-ground piping, as well as three concrete slabs.

On December 20, 1999, PGC submitted a letter to RIDEM seeking approval to start remedial activities in the Natural Gas Regulation Facility (**Figure 4A**). According to the letter, the Natural Gas Regulation Facility was approximately defined by borings D01 through D15; as shown on **Figure 4A**. Laboratory analytical results of surficial soil (0-2 feet bgs) samples collected from this area indicated arsenic, lead, and benzo (a) pyrene concentrations that exceeded the 1998 RAWP surficial soil Remedial Objectives in soil borings D03, D04, D07, D08, D10, D13, D14, and D15. There were no compounds detected in the subsurface soil samples that exceeded the RAWP subsurface soil Remedial Objectives.

To remediate the area prior to construction, PGC proposed excavating all of the surface and subsurface soil to the groundwater interface within the limits of the proposed regulator station construction. Since there were a large number of subsurface utility pipes in the area, PGC proposed leaving the soil in place below the piping so that the integrity of the piping could be maintained. Since remedial soil excavations were already being conducted in other areas of the Site under the 1998 RAWP (see Section 2.8), excavated soils from the 642 Allens Avenue regulator station were proposed to be managed on Site in the same manner. The excavation was proposed to be backfilled with clean fill (meeting the Remedial Objectives) and any areas that did not receive two feet of fill were covered with two, 2-inch lifts of asphalt.

The work plan for this area was approved by RIDEM in a letter to PGC dated March 16, 2000. Additionally, RIDEM Office of Air Resources (OAR) was notified of the proposed remediation and no permits were required based on correspondence dated February 14, 2000 from RIDEM OAR to ESS. Soils from the excavation were staged on Site for future disposal with other non-hazardous waste soils. Additionally, any inactive piping larger than 2 inches in diameter uncovered during excavations activities was removed and properly disposed in accordance with the RAWP.

³ Note that this remedial activity was summarized by VHB on behalf of the New England Gas Company (NEGC) in the April 2003 *Site Investigation Report (SIR)*. GZA has not been able to find any other documentation of this remedial activity.



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During the excavation activities, a small natural gas pipeline sump that formerly collected condensate was uncovered. This sump was located below the grade of the excavation and contained a small amount of water. RIDEM was consulted and the decision to remove the sump without further investigation was approved.

Verification sampling was performed within the excavation at 15 foot intervals along the bottom and sidewalls in accordance with the RAWP requirements. The excavation was backfilled to grade with a minimum of two feet of soil which met the Remedial Objectives in preparation for the new equipment installation; refer to **Figure 7**. A total of 1,200 cubic yards of soil was removed from the area for management on-Site.

The remedial action was documented in the April 2003 Site Investigation Report prepared by VHB on behalf of the New England Gas Company (NEGC) which was submitted to RIDEM.

- November 2002 *Remedial Action Closure Report* prepared by VHB on behalf of NEGC

VHB supervised remedial actions at a portion of Site from May 2002 to October 2002, pursuant to the RIDEM Temporary Remedial Action Permit (TRAP) issued by RIDEM on April 17, 2002. CHES of Weymouth, MA was the contractor providing the remediation/construction services and ENSR International (ENSR) of Westford, MA provided oversight services on behalf of New England Gas Company (NEGC). The scope of work for this remedial action consisted of installing a containment boom in the cove, excavating MGP impacted materials from within former MGP structures and/or impacted areas of the Site, performing stabilization and transportation of materials to an appropriate licensed out-of-state facility for treatment/disposal and backfill with soils meeting Remedial Objectives. The areas of material removal included six areas located primarily along the northern portion of the Site adjacent to the cove (refer to **Figure 4B**) and included the following:

- Former Tar and Ammonia Pits;
- Former Filters;
- Former Open Cooling Tank;
- Former Open Separating Tank;
- Former Open Tar Tank; and
- Light Non-Aqueous Phase Liquids (LNAPL) seep area along the cove area adjacent to the riverbank.

A containment boom was installed at the Site (see configuration on **Figure 2B** (*Existing Conditions Plan – Western Side of the Site*)) in the cove prior to any remedial work in this area.

Remedial soil excavations were guided by analytical data from soil samples collected from previous borings completed by ESS within Former Compressor Building No.1 and other historical Site investigation data (see Section 2.8 and **Appendix D** for information about historical site investigation activities at the Site).

The contents of the above-referenced structures generally consisted of coal tar sludges that were stabilized within each structure using a combination of soil, hydrated lime, and/or absorbent material. Once stabilized, the material was direct loaded, when feasible, for transport to one of three treatment/disposal facilities as described below.



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Impacted soils were also excavated from the area surrounding the structures and were either transported for treatment/disposal, used to stabilize structure contents prior to direct loading, used as backfill if the corresponding Remedial Objectives were not exceeded, or stored in the on-Site stockpile for use as subsurface backfill during future phases of the project. Subsequent to excavation activities, confirmatory soil samples were collected from excavation sidewalls and from the excavation floor (if the excavation did not extend into the ground water table) and compared to the 1998 RAWP Remedial Objectives to determine compliance.

Historic observations of sheening in the Providence River created concerns that there was a LNAPL seep area along the cove area adjacent to the riverbank. The natural gas pipeline located under the northern access road was shut down and a section removed to facilitate excavations within the LNAPL seep area. Upon completion of the remediation excavation, the natural gas pipeline was replaced with new pipe and put back into service. MGP-impacted soil in this area was excavated in an approximate area of 25 feet wide by 100 feet in length between Former Relief Gasholder No.16 and Former Open Cooling Tank and removed to a depth of 2 feet into the water table. Piping observed in this area was removed when possible; pipe that could not be removed was sealed with hydraulic cement.

A total of approximately 16,864 tons of MGP-impacted material was excavated, transported and treated/disposed of during the 2002 remedial activities. Approximately 9,558 tons was classified as hazardous and approximately 7,307 tons was classified as non-hazardous. The MGP-impacted material was shipped to one of three licensed receiving facilities: Keystone Sanitary Landfill (Keystone) in Dunmore, Pennsylvania; Environmental Soil Management, Inc. (ESMI) in Loudon, New Hampshire; and Chemical Waste Management, Inc. (WM Emelle) in Emelle, Alabama.

Recovery wells were installed to aid in the recovery of LNAPL from the groundwater surface in areas of subsurface soil excavations (CHES RW-1 to CHES RW-5). All soil excavations and excavated structures were backfilled with soil meeting the Remedial Objectives. The areas of the Site that were remediated under this work were completed with RIDEM-approved engineered caps (at least 2 feet of soil which met the Remedial Objectives, crushed stone asphalt, concrete or building); refer to **Figure 7**.

The remedial action was documented in the November 2002 *Remedial Action Closure Report* prepared by VHB on behalf of NEGEC which was submitted to RIDEM.

- December 2002 *Remedial Action Closure Report* prepared by VHB on behalf of NEGEC

ESS supervised remedial actions at a portion of the Site beginning in June 1999 in accordance with the RIDEM issued June 1, 1999 TRAP. The remedial activities were conducted to address a portion of the Site in the LNG Facility. These activities were of a time-critical nature due to the proposed construction of a vaporizer pad in the southwestern portion of the LNG facility adjacent to the containment dike. To construct the pad, surface soil was excavated and subsurface piping which traversed the area was removed.

During the remedial action, soil was excavated and disposed to allow for installation of the new vaporizer pad. The excavations were guided by test pit and soil boring data from previously completed RCA investigations (as presented in Section 2.8 and **Appendix D**). Excavation was generally conducted at least 2 feet into the water table. All MGP remnant piping was either removed or sealed with hydraulic cement.

Recovery wells (ESS RW-1 to ESS RW-6) were installed to aid in the recovery of LNAPL from the groundwater surface in areas of subsurface soil excavations. Areas that were excavated were capped with approximately 2 feet of clean fill meeting the Remedial Objectives or were covered by structures (vaporizer pad).



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Additional remedial activities consisted of the removal of the contents of the former tar and ammonia pits to the extent practical (located proximate to the former Compressor House No.1; **Figure 4B**). Portions of the former tar and ammonia tank were not structurally accessible due to the presence of the LNG containment dike. Approximately 50,800 gallons of coal tar was removed from the former tar and ammonia pits and shipped to the Norlite Corporation facility in Cohoes, NY for disposal.

A total of approximately 8,746 tons of MGP-impacted material was excavated, transported and disposed of during remedial activities. Approximately 722 tons was classified as hazardous and approximately 8,024 tons was classified as nonhazardous. According to correspondence from ESS to RIDEM, dated July 19, 2000, surface soil that did not meet the criteria for backfill and subsurface soil that was not classified as hazardous was shipped to Environmental Soil Management, Inc. (ESMI) in Loudon, NH. Hazardous waste soils were transported to Horizon Environmental Landfill in Grande-Piles, Quebec, Canada. The requirements for the export of hazardous waste, including the Notification of Export to the United States Environmental Protection Agency (USEPA), were met according to a letter dated July 24, 2000 from the USEPA (EPA Notice No. 435/00).

Approximately 9,782 gallons of water and LNAPL was pumped from excavations utilizing vacuum trucks from Cyn Environmental Services. The water and LNAPL was disposed of at Cyn Environmental Service's Stoughton, MA recycling facility.

All excavations were backfilled with soil meeting the Remedial Objectives. The areas of the Site that were remediated under this work were completed with RIDEM-approved engineered caps (at least 2 feet of soil meeting the Remedial Objectives, crushed stone, asphalt, concrete or building); refer to **Figure 7**.

The remedial action was documented in the December 2002 *Remedial Action Closure Report* prepared by VHB on behalf of NEGC which was submitted to RIDEM.



APPENDIX G

SUMMARY OF EARTHWORK ACTIVITIES conducted under the September 2012 Soil Management Plan (SMP) (October 2012 through December 2022)



Appendix G

Summary of Earthwork Activities conducted under the September 2012
Soil Management Plan (SMP) (October 2012 through April 2022)
642 Allens Avenue Former Manufactured Gas Plant (MGP)
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A Soil Management Plan (SMP) was established for the Site and submitted to RIDEM on September 12, 2012. The SMP was prepared to establish procedures that will be followed should construction or utility maintenance activities at the Property require the need to manage soils excavated from the subsurface. The SMP established procedures for soil screening/disposal requirements, soil stockpile management and erosion controls, odor controls, dust controls, capping requirements, decontamination protocols equipment leaving the Site, requirements for import of soils, basic dewatering guidelines and management of non-soils (such as asphalt or concrete). The SMP is similar to what would be recorded with an Environmental Land Usage Restriction (ELUR) and has been utilized at the Site for numerous small facility projects (such as fence post installation, geotechnical investigation work, utility emergency work, smaller facility projects under previously installed engineered caps, and other critical utility infrastructure work)¹.

In accordance with the SMP, The Narragansett Electric Company (TNEC) or GZA notified the RIDEM Office of Land Revitalization and Sustainable Materials Management (OLRSMM) prior to initiation of intrusive activities for each of the projects described below, with the exception of emergency repairs.

Since the SMP was established, TNEC has completed several smaller projects onsite following the SMP; these projects are summarized in the table below. For each of these projects, a representative from GZA was onsite during intrusive activities to perform perimeter air monitoring as needed, and to oversee compliance with the requirements of the SMP. The perimeter air monitoring program for these projects generally consisted of collection of periodic measurements upwind and downwind of the work zone for TVOCs using a MiniRAE Model 3000 Photo-Ionization Detector (PID) and Respirable Dust (PM₁₀) Levels employing a DustTrak dust meter. TVOC and PM₁₀ readings were measured at the perimeter of the Project area approximately every two hours during each day or more frequently depending on field conditions (at least four times a day). The thresholds for the perimeter air monitoring program were sustained readings (readings lasting 5 minutes) of 1.0 ppmv for TVOCs and 150 µg/m³ for respirable dust. If the observed perimeter air monitoring readings were observed as approaching these thresholds, GZA personnel would direct the contractors to implement the following corrective measures:

- Dust control measures were employed to mitigate the potential for release of airborne particulate matter beyond the limits of the Site perimeter in accordance with RIDEM Air Pollution Control Regulation No. 5, *Fugitive Dust*. Methods of dust control consisted of sprinkling the ground surface with water and/or calcium chloride, covering of temporary stockpiles and mulching; and
- Odor control measures were employed to mitigate the potential for release of odors beyond the limits of the Site perimeter in accordance with RIDEM Air Pollution Control Regulation No. 17, *Odors*. Methods of odor control consisted of backfilling excavations and covering stockpiles or excavations with 6-mil polyethylene sheeting.

In the event that corrective measures did not reduce the observed readings for Dust or TVOCs, construction activities would be ceased until the dust or TVOC levels were within permissible levels.

¹ On September 6, 2016, RIDEM informed National Grid that RIDEM received a formal request for development of a Public Involvement Plan (PIP) with a *PIP Process Initiation Letter*. GZA, on behalf of National Grid, submitted the PIP to RIDEM on October 28, 2016. A revised *PIP* was submitted to RIDEM on May 4, 2017. After responding to comments issued by RIDEM on June 2, 2017, the *PIP* was finalized on June 9, 2017. RIDEM issued a *Public Involvement Plan Approval Letter* on June 28, 2017. The *PIP* is not intended to apply to projects involving limited subsurface disturbance associated with construction activities or those located in areas previously capped consistent with RIDEM requirements. In addition, the *PIP* does not apply to work necessary to maintain day-to-day operations at existing facilities or facility emergencies, including repairs and maintenance of the natural gas regulating facility, compressed natural gas fueling station, liquefied natural gas facility, and cement distribution facility. The *PIP* also does not apply to projects involving minor soil disturbances only (e.g. utility work, installation of fence posts, etc.). Therefore, the PIP does not apply to the projects described herein.



Appendix G

Summary of Earthwork Activities conducted under the September 2012
Soil Management Plan (SMP) (October 2012 through April 2022)
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In addition to the perimeter air monitoring, GZA personnel also assisted contractors with segregation of Site soils in accordance with the SMP and management/disposal of Site soils. For projects located in areas with existing engineered caps, GZA assisted the contractor in segregating clean cap material from underlying site soils. Segregated clean cap material was reused to the extent possible. In general, GZA field screened excavated soils for visual and olfactory evidence of gross contamination. As needed, further field screening was performed via jar-headspace screening. Any Site soils presenting evidence of gross contamination was segregated for offsite disposal. Site soils that did not present evidence of gross contamination was reused to the extent possible beneath the engineered cap depending on geotechnical suitability (as determined by the contractor). For all of the projects described below, excess Site soils were disposed of at ESMI in Loudon, New Hampshire under a Bill of Lading (BOL).

In the event that dewatering was required during earthwork activities, dewatering water was generally containerized in fractionation tanks for offsite disposal at a licensed disposal facility under a BOL or manifest. Similarly, if Non-Aqueous Phase Liquid (NAPL) was encountered during earthwork activities, the NAPL was removed via oil absorbent materials and/or skimming/pumping and containerized for offsite disposal at a licensed facility under a BOL or manifest.

GZA also documented restoration activities for the projects described below. Restoration activities for these projects generally consisted of replacing the existing engineered caps in kind, or installation an engineered cap in accordance with the SMP. The engineered caps installed for these projects generally consisted of either (1) two feet of clean soil, (2) one foot of clean soil underlain by permeable geosynthetic; (3) asphalt pavement cover; or (4) permanent structures with concrete slab. As needed, GZA or the contractor collected representative samples of clean imported materials for compliance with the Method 1 Residential Direct Exposure Criteria (RDEC). Clean imported fill was sampled every 2,000 cubic yards for Priority Pollutant 13 metals (PP-13) via EPA Methods 6010C and 7471B, volatile organic compounds (VOCs) via EPA Method 8260B, total petroleum hydrocarbons (TPH) via EPA Method 8100M, SVOCs via EPA Method 8270D, and Polychlorinated Biphenyls (PCBs) via EPA Method 8082A. Import material was sampled at a frequency of one sample per every 500 cubic yards for arsenic. All sampling results for clean imported fill material were below the RDEC.

Sixty seven (67) projects have been conducted under the SMP between September 2012 and April 2022. The approximate location of each of these projects is included on the attached **Figure 1**.

| No. | Date | Activity | Site Area | Contractor |
|-----|---------------------------------|-----------------------------------|---|--|
| 1 | October 2012 | Emergency Natural Gas Line Repair | Natural Gas Regulator Facility | TNEC |
| 2 | October 2012 | Fence Repair | LNG Facility | McGrath Fence Company (McGrath) |
| 3 | January – May 2013 ² | Emergency Natural Gas Line Repair | Natural Gas Regulator Facility | TNEC and Clean Harbors Environmental Services (CHES) |
| 4 | April 2013 | Utility Pole Replacement | Natural Gas Regulator Facility | TNEC |
| 5 | September – | Rip-rap revetment repair | Natural Gas Regulator Facility / LNG Facility | J.H. Lynch and Sons (Lynch) |

² This activity required groundwater dewatering, treatment and management. As described below, the May 23, 2013 *Summary Letter Report – Temporary On-site Treated Groundwater Discharge Permit* was submitted to RIDEM, which provided information about the groundwater management that was completed for this project. Documentation included herein is intended to be a completion report for the soil management aspect of this project.



Appendix G

Summary of Earthwork Activities conducted under the September 2012
Soil Management Plan (SMP) (October 2012 through April 2022)
642 Allens Avenue Former Manufactured Gas Plant (MGP)
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| No. | Date | Activity | Site Area | Contractor |
|-----|------------------------------|--|--------------------------------|--|
| | November 2013 | | | |
| 6 | June 2014 | Hydrant Replacement | LNG Facility | Lynch |
| 7 | June 2014 | Geotechnical Drilling | LNG Facility | Geologic Earth Explorations (subcontracted to CHI Engineering) |
| 8 | June – July 2014 | Electrical Alarm Upgrades | LNG Facility | Bond Brothers (Bond) |
| 9 | October – November 2014 | Foam System Upgrades | LNG Facility | Robert P. Ianuccillo and Sons (RPI) |
| 10 | December 2014 | Septic System Cleaning | Holcim Cement Facility | CHES |
| 11 | December 2014 – January 2015 | Demolition of sheds/general debris removal” | Natural Gas Regulator Facility | Citiworks Corporation (Citiworks), Tom Ford Company Incorporated (TFCI) and TNEC |
| 12 | December 2014 | Emergency Water Line Repair | Natural Gas Regulator Facility | Lynch |
| 13 | February – June 2015 | Above-ground Piping Demolition Activities | Natural Gas Regulator Facility | Tantara Corporation (Tantara), TFCI, Citiworks and TNEC |
| 14 | May – June 2015 | Scale Replacement | LNG Facility | Lynch |
| 15 | May 2015 – May 2016 | Geotechnical Drilling and Test Pitting | LNG Facility | Geologic Earth Explorations, Inc. (Geologic) (subcontracted to Kiewit Engineering and Design Company (Kiewit)) |
| 16 | August – October 2015 | Fence Repair | LNG Facility | McGrath |
| 17 | September – October 2015 | Demolition of the Former Compressor House No.1 | Natural Gas Regulator Facility | TFCI and TNEC |
| 18 | September 2015 | Repair of Potable Water Line | Holcim Cement Facility | CHES |
| 19 | October 2015 – May 2016 | Pre-Design Activities – Holder 18/21 Capping Project | Natural Gas Regulator Facility | TFCI, Geosearch Environmental Contractors (Geosearch), CHES and TNEC |
| 20 | October 2015 | New Fence Installation | Natural Gas Regulator Facility | Parker Fence (subcontracted to TFCI) |
| 21 | November – December 2015 | Foundation Installation for Proposed Ice Shield | LNG Facility | Lynch |



Appendix G

Summary of Earthwork Activities conducted under the September 2012
Soil Management Plan (SMP) (October 2012 through April 2022)
642 Allens Avenue Former Manufactured Gas Plant (MGP)
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| No. | Date | Activity | Site Area | Contractor |
|-----|-------------------------------|---|--|--|
| 22 | February 2015 – December 2016 | New Regulator Station Buildings (including pre-design test borings) | Natural Gas Facility | Geologic, Crawford Drilling and Rosciti Construction |
| 23 | April 2016 | Emergency Natural Gas Line Repair | Natural Gas Regulator Facility | TNEC |
| 24 | August 2016 | Access Road Potholing | LNG Facility/ Natural Gas Regulator Facility | Kiewit |
| 25 | August 2016 | Barge Line Demolition | LNG Facility | Lynch |
| 26 | October 2016 | Emergency Natural Gas Line Repair | Natural Gas Regulator Facility | TNEC |
| 27 | August 2015 – November 2017 | Riser Repair | Natural Gas Regulating Facility | TNEC and Bond |
| 28 | October 2016 – November 2017 | Filter Separator Installation | Natural Gas Regulating Facility | Bond |
| 29 | February 2017 | Fence Installation | CNG Fueling Station | Citiworks |
| 30 | April 2017 | Fence Installation | LNG Facility | McGrath |
| 31 | April – May 2017 | Emergency Water Main Break Repair | LNG Facility | R.H. White |
| 32 | September – November 2017 | Water Line Replacement | LNG Facility | Lynch |
| 33 | October 2017 – December 2017 | New Conduit | Natural Gas Regulating Facility | Universal Construction |
| 34 | November 2017 | Landscaping Services | Natural Gas Regulating Facility | Stanley Tree Service |
| 35 | November – December 2017 | Test Pits | Natural Gas Regulating Facility | CHES, MSR Utility Maintenance (MSR) and TNEC |
| 36 | December 2017 | Fence Installation | Natural Gas Regulating Facility | Citiworks, CHES and O'Rourke Electrical |
| 37 | December 2017 | Anode Installation - Gas Line | Natural Gas Regulating Facility | MSR and TNEC |



Appendix G

Summary of Earthwork Activities conducted under the September 2012
Soil Management Plan (SMP) (October 2012 through April 2022)
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| No. | Date | Activity | Site Area | Contractor |
|-----|------------------------------|---|---------------------------------|---|
| 38 | March 2018 | Conduit Repair | LNG Facility | Verizon Communications, Inc. and Parkside Utility Contractors |
| 39 | April – July 2018 | Gate Installation | LNG Facility | McGrath |
| 40 | July – November 2018 | LNG Water Line Installation | LNG Facility | Lynch |
| 41 | July – December 2018 | Inlet Outlet Piping Work | Natural Gas Regulating Facility | Bond |
| 42 | July 2018 – March 2019 | Gas Line Replacement | Natural Gas Regulating Facility | Bond |
| 43 | November 2018 | Emergency Gas Line Repair | Natural Gas Regulating Facility | TNEC |
| 44 | December 2018 | Drainage Line Repair | LNG Facility | Lynch |
| 45 | January – February 2019 | New Utility Poles | Natural Gas Regulating Facility | CHES / TNEC |
| 46 | April – June 2019 | Booster House Demolition Project | Natural Gas Regulating Facility | Costello Dismantling Company, Inc. (Costello) |
| 47 | June – August 2019 | Geotechnical Drilling | LNG Facility | GZA / Geologic |
| 48 | July 2019 | New Utility Pole | Natural Gas Regulating Facility | TNEC |
| 49 | September 2019 | Hydrant / Bollard Installation and Slope Repair | LNG Facility | Lynch |
| 50 | November 2019 | Holder Slab Paving Project | Natural Gas Regulating Facility | Lynch |
| 51 | November 2019 | Junction Box Repair | LNG Facility | CHES |
| 52 | October 2019 – February 2021 | Inlet Outlet Piping Work | Natural Gas Regulating Facility | Bond |
| 53 | March – April 2020 | CNG Fueling Station Demolition Project | CNG Fueling Station | Costello |
| 54 | October 2020 | Slope Repair | LNG Facility | Lynch |
| 55 | May 2021 | Bollards installation | LNG Facility | Lynch |



Appendix G

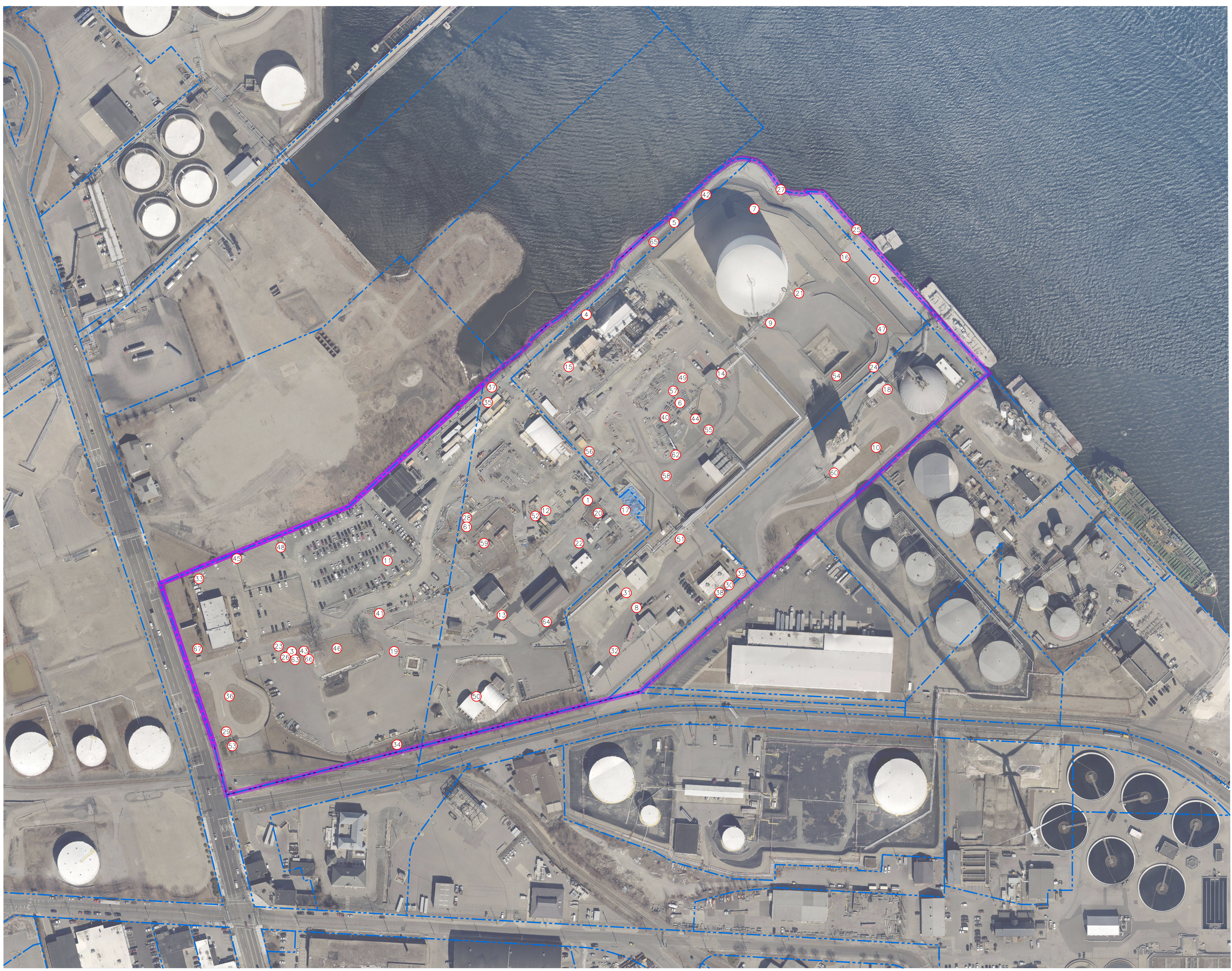
Summary of Earthwork Activities conducted under the September 2012
Soil Management Plan (SMP) (October 2012 through April 2022)
642 Allens Avenue Former Manufactured Gas Plant (MGP)
Providence, Rhode Island

| No. | Date | Activity | Site Area | Contractor |
|-----|----------------------------|---|--|---|
| 56 | April – July 2021 | Tail Gas Line Installation Project | Natural Gas Regulating Facility / LNG Facility | Bond |
| 57 | June – July 2021 | Hydrant Replacement | LNG Facility | Bond |
| 58 | May – June 2021 | Drain Line Investigation | LNG Facility | Lynch |
| 59 | July – August 2021 | Regulator Station Decommissioning Test Pits | Natural Gas Regulating Facility | Bond |
| 60 | December 2021 | Electrical Conduit Installation | Holcim Cement Facility | Holcim |
| 61 | December 2021 – April 2022 | Regulator Station Decommissioning Project | Natural Gas Regulating Facility | Bond |
| 67 | June 2022 | New Sign Posts | Natural Gas Regulating Facility | Clean Harbors Environmental Services Inc. |

In addition, the following activities were also completed under the September 2012 SMP; however, for these projects, completion letters were submitted to RIDEM independently.

| | Date | Activity | Site Area | Contractor | Submittal Date and Title |
|----|---------------------|--|---|---------------------------------|--|
| 62 | September 2012 | Sinkhole Repair | LNG Facility | TFCI | February 14, 2013 <i>Summary of September 2012 Sinkhole and Washout Areas Repair Activities</i> |
| 63 | January – May 2013 | Natural Gas Line Repair – Groundwater Management | Natural Gas Regulator Facility | TNEC and CHES | May 23, 2013 <i>Summary Letter Report – Temporary On-site Treated Groundwater Discharge Permit</i> |
| 64 | July – August 2013 | Natural Gas Line Upgrades | Natural Gas Regulator Facility | AGI Construction (AGI) and TNEC | December 12, 2013 <i>Summary of Hoxie Run Natural Gas Line Upgrade Activities</i> |
| 65 | May – December 2013 | Water Line Repair, Hydrant Replacement, Replace Poles, Repair Rectifier, Repair Section of Rip-Rap Revetment | LNG Facility / Natural Gas Regulator Facility | Lynch and TNEC | November 6, 2014 <i>Summary of LNG Water Line Upgrade Activities</i> |
| 66 | September 2015 | Natural Gas Line Repair | Natural Gas Regulator Facility | CHES and TNEC | October 15, 2015 <i>Summary of Gas Line Repair Soil and Groundwater Management Activities</i> |

2023 - GZA GeoEnvironmental, Inc. GZA-33554.01_SVP_FIGURES_CAD_DRAWING_33554.01_SITELINE_DRAWING_33554.01_OVERALL_DRAWING_1 - JUNE 9, 2023 12:53 PM USA THERMAL



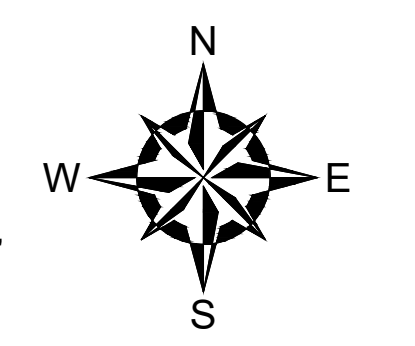
LEGEND:

- - - PROPERTY LINES
- 642 ALLENS AVENUE FORMER MGP SITE BOUNDARY

REFERENCE NOTES:

1. BASE MAP DEVELOPED FROM RHODE ISLAND'S RIGIS AERIAL IMAGERY FLOWN IN SPRING 2021.
2. PROPERTY LINES ESTABLISHED FROM INFORMATION PROVIDED ON A DRAWING TITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. SV-1 THROUGH SV-3.
3. SITE BOUNDARIES ARE APPROXIMATE.

**DRAFT COPY
ISSUED FOR REVIEW**



THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

| | | | |
|---|---------------------------------|---|-------------------------------|
| <p>SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND</p> | | | |
| <p>ACTIVITIES CONDUCTED UNDER SMP 2012-2022</p> | | | |
| <p>PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p> | | <p>PREPARED FOR: Rhode Island Energy www.rienergy.com</p> | |
| <p>PROJ MGR: SH</p> | <p>REVIEWED BY: MSK</p> | <p>CHECKED BY: JJC</p> | <p>DRAWING NO. G-1</p> |
| <p>DESIGNED BY: SH</p> | <p>DRAWN BY: LDT</p> | <p>SCALE: AS NOTED</p> | <p>REVISION NO. 0</p> |
| <p>DATE: JUNE, 2023</p> | <p>PROJECT NO. 33554.01</p> | <p>REVISION NO. 0</p> | <p>SHEET NO. 1 OF 1</p> |



APPENDIX H

WELL DECOMMISSIONING LOGS



Well Abandonment Form

Well ID: CHES RW-1

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 1200

Site Address: 642 Allens Ave

Time Finished: 1300

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 815

Well Diameter: 12"

Depth to LNAPL: -

Depth to Water: 7.9'

LNAPL Thickness: -

Depth to Bottom of the Well: 10.4'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 8.6'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 60

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx

Sophia Narkiewicz



Well Abandonment Form

Well ID: CHES RW-2

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 1400

Site Address: 642 Allens Ave

Time Finished: 1500

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 800

Well Diameter: 12"

Depth to LNAPL: -

Depth to Water: 7.3'

LNAPL Thickness: -

Depth to Bottom of the Well: 10.40'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 7.4'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 80

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx

Sophia Narkiewicz



Well Abandonment Form

Well ID: CHES RW-3

Date Abandoned: 7/1/16

GZA Job Number: 33554

Time Started: 8:30

Site Address: 121 Terminal Road

Time Finished: 10:30

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 8:30

Well Diameter: 12"

Depth to LNAPL: -

Depth to Water: 11'

LNAPL Thickness: -

Depth to Bottom of the Well: 16'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 13'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 76

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx

Sophia Narkiewicz



Well Abandonment Form

Well ID: CHES RW-4

Date Abandoned: 7/5/16

GZA Job Number: 33554

Time Started: 8:09

Site Address: 121 Terminal Road

Time Finished: 8:45

Town, State: Providence, RI

Gauging date: 7/5/16

Gauging Time: 8:01

Well Diameter: 12"

Depth to LNAPL: -

Depth to Water: 11.10'

LNAPL Thickness: -

Depth to Bottom of the Well: 12.3'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 10'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 60

Crew onsite: David Sheldon

GZA Personnel onsite: Matt Muto

Phil



Well Abandonment Form

Well ID: CHES RW-5

Date Abandoned: 7/1/16

GZA Job Number: 33554

Time Started: 12:00

Site Address: 121 Terminal Road

Time Finished: 12:35

Town, State: Providence, RI

Gauging date: 7/1/16

Gauging Time: 12:00

Well Diameter: 12"

Depth to LNAPL: -

Depth to Water: 11.8'

LNAPL Thickness: -

Depth to Bottom of the Well: 14.1'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 12'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 70.5

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: ESS-RW-1

Date Abandoned: 7/9/16

GZA Job Number: 33554.60

Time Started: 9:45

Site Address: 642 Allens Ave

Time Finished: 10:45

Town, State: Providence, RI

Gauging date: 7/7/16

Gauging Time: 8:50

Well Diameter: 12"

Depth to LNAPL: -

Depth to Water: 6.78'

LNAPL Thickness: -

Depth to Bottom of the Well: 8.6'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 5.6'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 120

Crew onsite: Justin

GZA Personnel onsite: Sophia Narkiewicz

Hunter



Well Abandonment Form

Well ID: ESS RW-2

Date Abandoned: 7/7/16

GZA Job Number: 33554.60

Time Started: 1100

Site Address: 642 Allens Ave

Time Finished: 1200

Town, State: Providence, RI

Gauging date: 7/7/16

Gauging Time: 8:55

Well Diameter: 12"

Depth to LNAPL: -

Depth to Water: 8.38'

LNAPL Thickness: -

Depth to Bottom of the Well: 11.1'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 8.1'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 180

Crew onsite: Justin

GZA Personnel onsite: Sophia Narkiewicz

Hunter



Well Abandonment Form

Well ID: RW-1

Date Abandoned: 7/5/16

GZA Job Number: 33554

Time Started: 9:02

Site Address: 121 Terminal Road

Time Finished: 9:39

Town, State: Providence, RI

Gauging date: 7/5/16

Gauging Time: 9:00

Well Diameter: 12"

Depth to LNAPL: Trace

Depth to Water: 10.40'

LNAPL Thickness: Trace

Depth to Bottom of the Well: 13.8'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 11'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 65

Crew onsite: David Sheldon

GZA Personnel onsite: Matt Muto

Phil



Well Abandonment Form

Well ID: RCA-3

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 12:04

Site Address: 642 Allens Ave

Time Finished: 12:11

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 12:00

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.62'

LNAPL Thickness: -

Depth to Bottom of the Well: 18'

Depth to DNAPL: Trace

Depth to Bottom of Well (BGS): 16.1'

DNAPL Thickness: Trace

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: RCA-5

Date Abandoned: 7/1/16

GZA Job Number: 33554

Time Started: 11:48

Site Address: 121 Terminal Road

Time Finished: 12:00

Town, State: Providence, RI

Gauging date: 7/1/16

Gauging Time: 11:00

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 10'

LNAPL Thickness: -

Depth to Bottom of the Well: 17.2'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 15'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2.5

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: RCA-7

Date Abandoned: 7/6/16

GZA Job Number: 33554

Time Started: 8:30

Site Address: 642 Allens Ave

Time Finished: 9:30

Town, State: Providence, RI

Gauging date: -

Gauging Time: -

Well Diameter: -

Depth to LNAPL: -

Depth to Water: -

NAPL Thickness: -

Depth to Bottom of the Well: -

Depth to DNAPL: -

Depth to Bottom of Well (BGS): -

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: Well already filled with concrete pull casing

Abandonment material: -

Quantity Used (in gallons): -

Crew onsite: David Sheldon

GZA Personnel onsite: Matt Muto

Phil



Well Abandonment Form

Well ID: RCA-11

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 11:08

Site Address: 642 Allens Ave

Time Finished: 11:14

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 11:00

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 7.06'

LNAPL Thickness: -

Depth to Bottom of the Well: 14.95'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 12.44'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: RCA-13

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 13:33

Site Address: 642 Allens Ave

Time Finished: 13:50

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 13:30

Well Diameter: 2'

Depth to LNAPL: -

Depth to Water: N/A

LNAPL Thickness: -

Depth to Bottom of the Well: 6.7'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 5.6'
(Well Filled with Roots)

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 1

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx

Sophia Narkiewicz



Well Abandonment Form

Well ID: RCA-14

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 12:50

Site Address: 642 Allens Ave

Time Finished: 12:54

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 12:52

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.10'

LNAPL Thickness: -

Depth to Bottom of the Well: 15.1'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 13.55'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: RCA-20

Date Abandoned: 7/1/16

GZA Job Number: 33554

Time Started: 11:00

Site Address: 121 Terminal Road

Time Finished: 11:15

Town, State: Providence, RI

Gauging date: 7/1/16

Gauging Time: 11:00

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9'

LNAPL Thickness: -

Depth to Bottom of the Well: 14'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 12'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: RCA-29

Date Abandoned: 7/7/16

GZA Job Number: 33554.60

Time Started: 9:20

Site Address: 642 Allens Ave

Time Finished: 9:35

Town, State: Providence, RI

Gauging date: 07/07/16

Gauging Time: 8:45

Well Diameter: 2"

Depth to LNAPL: Trace

Depth to Water: 11.65

LNAPL Thickness: Trace

Depth to Bottom of the Well: 12.5'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 8.9'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2.5

Crew onsite: Justin

GZA Personnel onsite: Sophia Narkiewicz

Hunter



Well Abandonment Form

Well ID: RCA-32

Date Abandoned: 7/7/16

GZA Job Number: 33554.60

Time Started: 9:10

Site Address: 642 Allens Ave

Time Finished: 9:20

Town, State: Providence, RI

Gauging date: 7/7/16

Gauging Time: 8:40

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.98'

LNAPL Thickness: -

Depth to Bottom of the Well: 12.9'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 9.5'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2.5

Crew onsite: Justin

GZA Personnel onsite: Sophia Narkiewicz

Hunter



Well Abandonment Form

Well ID: RCA-33

Date Abandoned: 7/7/16

GZA Job Number: 33554.60

Time Started: 9:00

Site Address: 642 Allens Ave

Time Finished: 9:10

Town, State: Providence, RI

Gauging date: 7/7/16

Gauging Time: 8:35

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 8.21'

LNAPL Thickness: -

Depth to Bottom of the Well: 15.7'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 12'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2.5 Gallons

Crew onsite: Justin

GZA Personnel onsite: Sophia Narkiewicz

Hunter



Well Abandonment Form

Well ID: RCA-38

Date Abandoned: 7/7/16

GZA Job Number: 33554.60

Time Started: 8:45

Site Address: 642 Allens Ave

Time Finished: 9:00

Town, State: Providence, RI

Gauging date: 7/7/16

Gauging Time: 8:30

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 10.3'

LNAPL Thickness: -

Depth to Bottom of the Well: 15.6'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 12'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2.5

Crew onsite: Justin

GZA Personnel onsite: Sophia Narkiewicz

Hunter



Well Abandonment Form

Well ID: RCA-40

Date Abandoned: 7/1/16

GZA Job Number: 33554

Time Started: 12:38

Site Address: 121 Terminal Road

Time Finished: 13:15

Town, State: Providence, RI

Gauging date: 7/1/16

Gauging Time: 12:30

Well Diameter: 2"

Depth to LNAPL: 10.60

Depth to Water: 10.61'

LNAPL Thickness: .01

Depth to Bottom of the Well: 16.8'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 15'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2.5

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: U-1

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 13:08

Site Address: 642 Allens Ave

Time Finished: 13:16

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 13:00

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 5.3'

LNAPL Thickness: -

Depth to Bottom of the Well: 9.3

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 7'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: VHB-3

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 12:55

Site Address: 642 Allens Ave

Time Finished: 13:05

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 12:50

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 6.5'

LNAPL Thickness: -

Depth to Bottom of the Well: 10.18'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 7.38'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: VHB-6

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 13:20

Site Address: 642 Allens Ave

Time Finished: 13:30

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 13:20

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.8'

LNAPL Thickness: -

Depth to Bottom of the Well: 11.2'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 8.9'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: VHB-7

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 13:02

Site Address: 642 Allens Ave

Time Finished: 13:07

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 13:00

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.40

LNAPL Thickness: -

Depth to Bottom of the Well: 15.05

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 12.25

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: VHB-8R

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 8:57

Site Address: 642 Allens Ave

Time Finished: 9:05

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 8:57

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 7.6'

LNAPL Thickness: -

Depth to Bottom of the Well: 13.7'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 12.42'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: VHB-10

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 10:40

Site Address: 642 Allens Ave

Time Finished: 10:48

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 10:40

Well Diameter: 2"

Depth to LNAPL: Trace

Depth to Water: 12.5'

LNAPL Thickness: Trace

Depth to Bottom of the Well: 18'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 14.83'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2.5

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: VHB-13

Date Abandoned: 7/5/16

GZA Job Number: 33554

Time Started: 11:30

Site Address: 642 Allens Ave

Time Finished: 12:00

Town, State: Providence, RI

Gauging date: 7/5/16

Gauging Time: 11:30

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 10.6'

LNAPL Thickness: -

Depth to Bottom of the Well: 15.7'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 15.7'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: David Sheldon

GZA Personnel onsite: Matt Muto

Phil



Well Abandonment Form

Well ID: VHB-18

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 11:14

Site Address: 642 Allens Ave

Time Finished: 11:27

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 11:10

Well Diameter: 1" to 2"

Depth to LNAPL: -

Depth to Water: 5.93'

LNAPL Thickness: -

Depth to Bottom of the Well: 17'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 9.81'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: VHB-21

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 1:55

Site Address: 642 Allens Ave

Time Finished: 2:02

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 1:50

Well Diameter: 2"

Depth to LNAPL: 8.89

Depth to Water: 8.92'

LNAPL Thickness: .07

Depth to Bottom of the Well: 18.3'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 15.9'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: VHB-22

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 11:40

Site Address: 642 Allens Ave

Time Finished: 11:50

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 11:40

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.02'

LNAPL Thickness: -

Depth to Bottom of the Well: 17.2'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 15.3'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2.5

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: VHB-23

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 11:29

Site Address: 642 Allens Ave

Time Finished: 11:37

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 11:20

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.09'

LNAPL Thickness: -

Depth to Bottom of the Well: 17.3'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 15.85'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZA-204

Date Abandoned: 7/5/16

GZA Job Number: 33554

Time Started: 10:35

Site Address: 121 Terminal Road

Time Finished: 11:15

Town, State: Providence, RI

Gauging date: 7/5/16

Gauging Time: 10:35

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.1'

LNAPL Thickness: -

Depth to Bottom of the Well: 18.5'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 16.2'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: David Sheldon

GZA Personnel onsite: Matt Muto

Phil



Well Abandonment Form

Well ID: GZA-216

Date Abandoned: 7/5/16

GZA Job Number: 33554

Time Started: 10:01

Site Address: 121 Terminal Road

Time Finished: 10:30

Town, State: Providence, RI

Gauging date: 7/5/16

Gauging Time: 10:00

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 8'

LNAPL Thickness: -

Depth to Bottom of the Well: 18.6'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 16.7'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: David Sheldon

GZA Personnel onsite: Matt Muto

Phil



Well Abandonment Form

Well ID: GZ-311D

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 12:43

Site Address: 642 Allens Ave

Time Finished: 12:52

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 12:40

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 8.29'

LNAPL Thickness: -

Depth to Bottom of the Well: 32.58'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 29.83'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: Perforated Riser Sections

Abandonment material: Grout

Quantity Used (in gallons): 6

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-312S

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 12:26

Site Address: 642 Allens Ave

Time Finished: 12:48

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 12:20

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 6.26'

LNAPL Thickness: -

Depth to Bottom of the Well: 14.5'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 12.7'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-312D

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 12:15

Site Address: 642 Allens Ave

Time Finished: 12:24

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 12:10

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 7'

LNAPL Thickness: -

Depth to Bottom of the Well: 32.75'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 30.65'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: Perforated Riser Sections

Abandonment material: Grout

Quantity Used (in gallons): 7

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-313-D

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 11:52

Site Address: 642 Allens Ave

Time Finished: 12:01

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 11:50

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.45'

LNAPL Thickness: -

Depth to Bottom of the Well: 38'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 36.75'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: Perforated Riser Sections

Abandonment material: Grout

Quantity Used (in gallons): 7

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-314-S

Date Abandoned: 7/1/16

GZA Job Number: 33554

Time Started: 10:45

Site Address: 121 Terminal Road

Time Finished: 11:00

Town, State: Providence, RI

Gauging date: 7/1/16

Gauging Time: 10:40

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 12'

LNAPL Thickness: -

Depth to Bottom of the Well: 22'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 20'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 4

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-314-D

Date Abandoned: 7/1/16

GZA Job Number: 33554

Time Started: 10:30

Site Address: 121 Terminal Road

Time Finished: 10:37

Town, State: Providence, RI

Gauging date: 7/1/16

Gauging Time: 10:30

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 12'

LNAPL Thickness: -

Depth to Bottom of the Well: 36.9'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 34'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: Perforated Riser Sections

Abandonment material: Grout

Quantity Used (in gallons): 6

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-315-D

Date Abandoned: 7/1/16

GZA Job Number: 33554

Time Started: 11:30

Site Address: 642 Allens Ave

Time Finished: 11:45

Town, State: Providence, RI

Gauging date: 7/1/16

Gauging Time: 11:30

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 12'

LNAPL Thickness: -

Depth to Bottom of the Well: 33'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 31'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: Perforated Riser Sections

Abandonment material: Grout

Quantity Used (in gallons): 5

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-318-D

Date Abandoned: 6/28/16

GZA Job Number: 33554

Time Started: 14:03

Site Address: 642 Allens Ave

Time Finished: 14:07

Town, State: Providence, RI

Gauging date: 6/28/16

Gauging Time: 14:00

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 9.35'

LNAPL Thickness: -

Depth to Bottom of the Well: 36.35'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 34.15

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: Perforated Riser Sections

Abandonment material: Grout

Quantity Used (in gallons): 6

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-320D

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 10:32

Site Address: 642 Allens Ave

Time Finished: 10:34

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 10:30

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 12.4'

LNAPL Thickness: -

Depth to Bottom of the Well: 10.4'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 8.6'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: Perforated Riser Sections

Abandonment material: Grout

Quantity Used (in gallons): 7

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-401

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 10:23

Site Address: 642 Allens Ave

Time Finished: 10:31

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 10:20

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 8.50'

LNAPL Thickness: -

Depth to Bottom of the Well: 15.85'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 12.92'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 3

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZ-403

Date Abandoned: 6/27/16

GZA Job Number: 33554

Time Started: 9:48

Site Address: 642 Allens Ave

Time Finished: 9:58

Town, State: Providence, RI

Gauging date: 6/27/16

Gauging Time: 815

Well Diameter: 2"

Depth to LNAPL: -

Depth to Water: 7.09'

LNAPL Thickness: -

Depth to Bottom of the Well: 14.4'

Depth to DNAPL: -

Depth to Bottom of Well (BGS): 11.55'

DNAPL Thickness: -

Method of abandonment (circle one):

Removed Casing Overdrilling Split Casing Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 2

Crew onsite: Damien Jacobs

GZA Personnel onsite: Matt Muto

David Proulx



Well Abandonment Form

Well ID: GZA-201

Date Abandoned: 05/25/2022

GZA Job Number: 33554.98

Time Started: 0930

Site Address: 642 Allens Ave

Time Finished: 1005

Town, State: Providence, RI

Gauging date: 05/25/2022

Gauging Time: 0925

Well Diameter: 2"

Depth to LNAPL: 0.

Depth to Water: 10.81'

LNAPL Thickness: 0.

Depth to Bottom of the Well: 21.2'

Depth to DNAPL: 0.

Depth to Bottom of Well (BGS): 18.6'

DNAPL Thickness: 0.

* Casing stick-up: 2.6'

Method of abandonment (circle one):

Removed Casing

Overdrilling

Split Casing

Other

If other, explain: _____

Abandonment material: Grout

Quantity Used (in gallons): 5.5

Crew onsite: Nick Sousa (Brennan)

GZA Personnel onsite: Mark Dalpe (GZA)



APPENDIX I

CRMC PERMIT F2014-04-022 – Site Investigation Activities

State of Rhode Island and Providence Plantations

COASTAL RESOURCES MANAGEMENT COUNCIL

NOTICE OF

ASSENT

CRMC Assent No.: A2016-06-007

Date: June 3, 2016

This certifies that Narragansett Electric Company
has permission to decommission approximately (40) monitoring wells previously authorized by CRMC as per plans submitted to CRMC 06/02/16.

situated at 642 Allens Avenue

Plat No. 101|56

Lot No. 1|1,273,316,317

Said construction operations to be done in accordance with an approved assent on file in the Offices of the Coastal Resources Management Council and subject further to all the provisions of the building ordinances of the :

City/Town of

Providence

and to all the applicable State, Local and Federal provisions. This assent shall expire on July 1, 2019.



Official Designee

Coastal Resources Management Council

**THIS CARD MUST BE DISPLAYED IN A CONSPICUOUS PLACE ON THE PREMISES.
FAILURE TO DISPLAY WILL RESULT IN LEGAL ACTION.**



State of Rhode Island and Providence Plantations
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-3767

FINDING OF NO SIGNIFICANT IMPACT

June 3, 2016

Narragansett Electric Company
c/o Amy A. Willoughby
280 Melrose Street
Providence, RI 02907

RE: CRMC Assent No. A2016-06-007: decommission approximately (40) monitoring wells previously authorized by CRMC as per plans submitted to CRMC 06/02/16.
Project Location: 642 Allens Avenue, Providence; Plat 101|56, Lot 1|1,273,316,317

Dear Applicant:

The Coastal Resources Management Council has reviewed your project proposal and has determined the findings of no significant impact on coastal resources. In accordance with revisions to RIGL 46-23-6.3 Expiration Tolling Periods (as amended effective June 26, 2013) this project must be completed on or before July 1, 2019. If this project involves excess excavated materials, excess soils, excess construction materials, and debris (including any destructed materials) these materials shall be removed from the site and disposed of at an inland landfill or a suitable and legal upland location. If the project involves earthwork, appropriate erosion controls shall be utilized. All applicable policies, prohibitions, and standards of the RICRMP shall be upheld.

CAUTION: The limits of authorized work shall be only for that which was approved by the CRMC. Any activities or alterations which deviate from the approved plans will require a separate application and review. If the information provided to the CRMC for this review is inaccurate or did not reveal all necessary information or data, then this permit may be found to be null and void. Plans for any future alteration of the shoreline or construction or alteration within the 200' zone of CRMC jurisdiction or in coastal waters must be submitted for review to the CRMC prior to commencing such activity. Under no circumstances will this permit authorize any work which is considered prohibited under any of the sections of the Rhode Island Coastal Resources Management Program.

Permits, licenses or easements issued by the Council are valid only with the conditions and stipulation under which they are granted and imply no guarantee of renewal. The initial application or an application for renewal may be subject to denial or modification. If an application is granted, said permit, license and easement may be subject to revocation and/or modification for failure to comply with the conditions and stipulations under which the same was issued or for other good cause.

Applicant agrees that as a condition to the granting of this assent, members of the Coastal Resources Management Council or its staff shall have access to applicant's property to make on-site inspections to insure compliance with the assent.

A copy of this authorization to perform construction related activities shall be kept on site and available for inspection. NOTE: Failure to have this letter on site or work in excess of your proposal constitutes a violation under this program.

Sincerely,

Sincerely,


William Mosunic, Administrative Officer



APPENDIX J

May 13, 2014 Abutter Notification

May 13, 2014
File No. 03.0033554.00-C

Notice to Abutter
Planned Site Investigation Activities
642 Allens Avenue
Providence, Rhode Island
RIDEM Case No. 98-004



530 Broadway
Providence
Rhode Island
02909
401-421-4140
Fax: 401-751-8613
<http://www.gza.com>

The purpose of this letter is to notify you that The Narragansett Electric Company d/b/a National Grid (National Grid) will be conducting additional environmental investigation activities at 642 Allens Avenue in Providence, Rhode Island (herein referred to as the "Site"). The Site is further designated as Assessor's Plat (A.P.) 101 Lot 1, A.P. 56 Lots 5 and 316 of the City of Providence Tax Assessor's plat maps and is the location of a National Grid natural gas regulator station, compressed natural gas (CNG) fueling station, liquefied natural gas (LNG) facility and office building. This notice is being provided to abutting property owners and tenants in accordance with requirements established in the Rhode Island Department of Environmental Management's (RIDEM's) Rules and Regulation for the Investigation and Remediation of Hazardous Materials (Remediation Regulations). Should you be an owner of property that is leased, we request that you please provide a copy of this letter to your tenants.

The planned investigation activities are further described in a *Supplemental Site Investigation Work Plan (SSIWP)* which was prepared by GZA GeoEnvironmental, Inc. (GZA) on behalf of National Grid and submitted to RIDEM in March 2014. The investigation activities will be conducted as described in the SSIWP by GZA on behalf of National Grid. The purpose of the environmental investigations is to further evaluate the nature and extent of impacts to soil and groundwater at the Site. The investigation will involve the completion of test borings, test pit explorations, the installation of monitoring wells, and the sampling of environmental media (soil and groundwater) for laboratory testing. The field work for the investigation is scheduled to begin the week of May 19, 2014 and is expected to require approximately two months to complete.

If you would like more information or have any questions, please contact Amy Willoughby of National Grid at 781-907-3644.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

A handwritten signature in blue ink, appearing to read 'Margaret S. Kilpatrick'.

Margaret S. Kilpatrick, P.E.
Senior Project Manager

A handwritten signature in blue ink, appearing to read 'James J. Clark'.

James J. Clark, P.E.
Principal

MSK/JJC:tja

cc: Joe Martella, RIDEM
Amy Willoughby, National Grid

| Owner of Record | Mailing Address | |
|--|-----------------------------|--------------------------|
| Motiva Enterprises LLC | PO Box 4369 | Houston, TX 77210-4369 |
| Motiva Enterprises LLC, Michael Sullivan, NE Complex Manager | 520 Allens Avenue | Providence, RI 02905 |
| Narragansett Electric Company | 40 Sylvan Road | Waltham, MA 02451-2286 |
| City of Providence | 25 Dorrance Street | Providence, RI 02903 |
| Narragansett Bay Water Quality Management District | 235 Promenade Street # S500 | Providence RI 02908-5734 |
| Holcim US Inc. | 201 Jones Road | Waltham, MA 02451 |
| New England Telephone dba Verizon New England | 140 West Street | New York, NY 10007 |
| Joe Martella, RIDEM Office of Waste Management | 235 Promenade Street | Providence RI 02908 |



APPENDIX K

CRMC Permit F2014-04-022-Site Investigation Activities



State of Rhode Island and Providence Plantations
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 116
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-3767

FINDING OF NO SIGNIFICANT IMPACT

April 8, 2014

Narragansett Electric Company
c/o Amy A. Willoughby
40 Sylvan Road
Waltham, MA 02452

RE: CRMC Assent No. F2014-04-022
Site: 642 Allens Avenue, Providence
Plat: 101|56 Lot: 1|273,316,317,5

Project Description: Conduct various subsurface soil boring and test pits investigations as per plan submitted to CRMC on April 8, 2014.


The Coastal Resources Management Council has reviewed your project proposal and has determined the findings of no significant impact on coastal resources. In accordance with revisions to RIGL 46-23-6.3 Expiration Tolling Periods (as amended effective June 26, 2013) this project must be completed on or before **July 1, 2018**. If this project involves excess excavated materials, excess soils, excess construction materials, and debris (including any destructed materials) these materials shall be removed from the site and disposed of at an inland landfill or a suitable and legal upland location. **If the project involves earthwork, appropriate erosion controls shall be utilized.** All applicable policies, prohibitions, and standards of the RICRMP shall be upheld.

CAUTION: The limits of authorized work shall be only for that which was approved by the CRMC. Any activities or alterations which deviate from the approved plans will require a separate application and review. If the information provided to the CRMC for this review is inaccurate or did not reveal all necessary information or data, then this permit may be found to be null and void. Plans for any future alteration of the shoreline or construction or alteration within the 200' zone of CRMC jurisdiction or in coastal waters must be submitted for review to the CRMC prior to commencing such activity. Under no circumstances will this permit authorize any work which is considered prohibited under any of the sections of the Rhode Island Coastal Resources Management Program.

Permits, licenses or easements issued by the Council are valid only with the conditions and stipulation under which they are granted and imply no guarantee of renewal. The initial application or an application for renewal may be subject to denial or modification. If an application is granted, said permit, license and easement may be subject to revocation and/or modification for failure to comply with the conditions and stipulations under which the same was issued or for other good cause.

Applicant agrees that as a condition to the granting of this assent, members of the Coastal Resources Management Council or its staff shall have access to applicant's property to make on-site inspections to insure compliance with the assent.

A copy of this authorization to perform construction related activities shall be kept on site and available for inspection. **NOTE:** Failure to have this letter on site or work in excess of your proposal constitutes a violation under this program.

Sincerely,

William J. Mosunic, Administrative Officer
Coastal Resources Management Council

/lat

State of Rhode Island and Providence Plantations

COASTAL RESOURCES MANAGEMENT COUNCIL

NOTICE OF

ASSENT

CRMC Assent No.: 2014-04-022 Date: April 8, 2014


This certifies that Narragansett Electric Company
has permission to Conduct various subsurface soil boring and test pits investigations as per plan submitted to CRMC on 04-08-2014

situated at 642 Allens Avenue
Plat No. 101|56 Lot No. 1|273,316,317,5

Said construction operations to be done in accordance with an approved assent on file in the Offices of the Coastal Resources Management Council and subject further to all the provisions of the building ordinances of the :

City/Town of Providence

and to all the applicable State, Local and Federal provisions. This assent shall expire on July 1, 2018.


Official Designee
Coastal Resources Management Council

**THIS CARD MUST BE DISPLAYED IN A CONSPICUOUS PLACE ON THE PREMISES.
FAILURE TO DISPLAY WILL RESULT IN LEGAL ACTION.**



APPENDIX L

GZA 2014 EXPLORATION LOGS

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-301D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 17.87
Final Boring Depth (ft.): 30
Date Start - Finish: 5/22/2014 - 5/30/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/3/14 | N.A | 10.01 | 3 Days |
| 6/11/14 | 11:55 | 9.99 | 11 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Top 12": Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, Dry Bottom 12": Brown (10YR, 5/3) fine SAND, some Silt, Dry | 1 2 | ND ND | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Red-brown (5YR, 4/4) SLAG, some fine to coarse Sand, little Ash, Dry | | ND | | | | |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Red-brown (5YR, 4/4) SLAG, some fine to coarse Sand, little Ash, Dry | | ND | | | | |
| 5 | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 0 | 3 1 1 1 | S-4 : Very loose, no recovery | | NM | | | FILL | |
| 7 | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 6 | 1 1 2 2 | S-5 : Very loose, dark brown (10YR, 3/2) SLAG, some fine to coarse SAND, trace (+) Gravel, trace (+) Silt, trace (+) Brick, trace (+) Coal, trace Ash, Wet | 3 | ND | | | | ← PVC Riser |
| 9 | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 6 | 3 1 2 9 | S-6 : Very loose, dark brown (10YR, 3/2) SLAG, some fine to coarse SAND, trace (+) Gravel, trace (+) Silt, trace (+) Brick, trace (+) Coal, trace Ash, Wet | | ND | | | | |
| 11 | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 12 | 8 1 1 6 | S-7 : Top 4": Dark brown (10YR, 3/2) SLAG, some fine to coarse SAND, trace (+) Gravel, trace (+) Silt, trace (+) Brick, trace (+) Coal, trace Ash, Wet Bottom 8" Very loose, gray brown (10YR, 4/2) fine to coarse SAND, little Silt, trace (+) Gravel, Wet | | ND ND | | | | |
| 13 | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 4 | 17 11 8 2 | S-8 : Medium dense, gray brown (10YR, 4/2) GRAVEL, little fine to coarse Sand, little Silt, Wet | | ND | | | 14 3.9 POSSIBLE FILL/SANDS AND SILT | |
| 15 | | | | | | | | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 8 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-301D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:07 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-301D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth(ft.) | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|------------|---------------------|------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 8 | 3 2 5 4 | S-9 : Loose, gray brown (10YR, 4/2) fine to coarse SAND, little Gravel, little Silt, Wet | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 4 | 3 4 4 4 | S-10 : Loose, gray brown (10YR, 4/2) fine to coarse SAND, little Gravel, little Silt, Wet | | | | | | | | |
| 19 | | | | | | | 4 | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 12 | 25 8 1 2 | S-11 : Loose, dark gray (10YR, 4/1) Organic SILT and SAND, little Wood, little Roots, trace Gravel, Wet | | | | | 20 | -2.1 | | |
| 21 | | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 16 | 4 3 4 4 | S-12 : Top 6": Dark gray (10YR, 4/1) Organic SILT and SAND, little Wood, little Roots, trace Gravel, Wet Bottom 10": Dark gray (10YR, 4/1) Organic SILT, trace Wood, trace Roots, Wet | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 20 | 4 3 1 2 | S-13 : Top 6": Dark gray (10YR, 4/1) Organic SILT, trace Wood, trace Roots, Wet Bottom 14" red brown (5YR, 5/4) PEAT, some Roots, some Wood, trace Gravel, Wet | | | | | | | | |
| 25 | | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 24 | 13 10 14 13 | S-14 : Top 8": Red brown (5YR, 5/4) PEAT, some Roots, some Wood, trace Gravel, Wet 8"-16": Red brown (5YR, 5/4) fine to coarse SAND and SILT, trace Gravel, trace Roots, trace wood, trace Organics, Wet Bottom 8": Gray (10YR, 4/1) fine SAND, trace Silt, trace Gravel, Wet | | | | | 27 | -9.1 | | |
| 27 | | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 14 | 5 4 4 3 | S-15 : Loose, gray (10YR, 4/1) fine SAND and SILT, trace (+) Gravel, Wet | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -12.1 | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs, 2" Diameter, Schedule 40, flush joint, PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 16-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-301D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-302D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 16.97
Final Boring Depth (ft.): 30
Date Start - Finish: 5/22/2014 - 5/30/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/11/14 | 10:45 | 9.47 | 13 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|-----------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Top 12" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, dry Bottom 12" Yellow brown (10YR, 5/6) fine SAND, little Silt, dry | 1 2 | ND ND | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/6) fine SAND, some Silt, moist | 0.1 | | | | | Possible Fill/SAND and SILT | ← Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Brown (10YR, 4/3) fine to medium SAND, little Gravel, little Silt, moist | 0.1 | | | | | | |
| 4 | S-4 | 6-8 | 24 | 3 | 12 11 12 12 | S-4 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, trace (+) Gravel, trace Silt, wet | | ND | | | | | |
| 5 | S-5 | 8-10 | 24 | 6 | 12 12 12 13 | S-5 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, trace (+) Gravel, trace Silt, wet | 3 | ND | | | | | ← PVC Riser |
| 6 | S-6 | 10-12 | 24 | 16 | 10 10 11 14 | S-6 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, trace (+) Gravel, trace Silt, wet | | ND | | | | SAND | |
| 7 | S-7 | 12-14 | 24 | 0 | 12 15 11 12 | S-7 : Medium dense, no Recovery | | NM | | | | | |
| 8 | S-8 | 14-16 | 24 | 9 | 13 9 14 9 | S-8 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, little Gravel, trace Silt, wet | | ND | | | | | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 7 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-302D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:08 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-302D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 12 | 9 11 23 7 | S-9 : Dense, gray (GLEY, 5/N) fine to coarse SAND, little (+) Gravel, trace (+) Silt, moderate oil-like odor, wet | | | | | | | <p>← Filter Sand</p> <p>← Bentonite Seal</p> <p>Well Screen</p> |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 14 | 23 12 23 15 | S-10 : Dense, tan (10YR, 4/2) fine to coarse SAND, little Gravel, trace (-) Silt, moderate oil-like odor, oil-like blebs observed from 19.5-19.7 feet bgs, wet | 4 | | | | | | |
| 19 | | | | | | | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 7 | 14 13 18 14 | S-11 : Dense, tan/gray (10YR, 4/3) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, wet | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 12 | 10 8 8 7 | S-12 : Medium dense, gray (GLEY, 4/10YR) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | | | | SAND | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 5 | 11 13 15 13 | S-13 : Medium dense, gray (GLEY, 4/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 17 | 15 14 10 12 | S-14 : Medium dense, gray (GLEY, 4/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 9 | 16 16 38 17 | S-15 : Dense, gray (GLEY, 4/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | | 30 -13.0 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-4 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-302D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-302S
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 16.97
Final Boring Depth (ft.): 15
Date Start - Finish: 5/22/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/11/14 | 13:00 | 9.57 | 8 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-----------------------------------|------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 0-15 | | | | | | : None/Refer to GZ-302D | | | | | | | |
| 1 | | | | | | | 1 | | | | | | ← Road Box |
| 2 | | | | | | | | | | | | | |
| 3 | | | | | | | 2 | | | | Possible Fill/SAND and SILT | | ← PVC Riser |
| 4 | | | | | | | | | | | | | ← Bentonite Seal |
| 5 | | | | | | | | | | | 5 | 12.0 | ← Filter Sand |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | 15 | 2.0 | ← Well Screen |

REMARKS

1 - No sampling completed at this location. See GZ-302D for sampling details. Stratum and impact descriptions inferred from GZ-302D.
 2 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-15 feet bgs; Bentonite Seals installed from 3-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-302S**

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:09 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-303D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.78
Final Boring Depth (ft.): 30
Date Start - Finish: 5/22/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 5/30/14 | NM | 6.41 | 1 Day |
| 6/3/14 | NM | 6.38 | 5 days |
| 6/12/14 | 13:30 | 6.39 | 14 days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, dry | 1 2 | ND | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/6) fine SAND, little Silt, trace Gravel, dry | | ND | | | | | ← Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Brown (7.5YR, 5/6) fine SAND, little Silt, trace Gravel, moist | | ND | | | | | ← PVC Riser |
| 4 | S-4 | 6-8 | 24 | 16 | 8 8 6 6 | S-4 : Medium dense, tan (10YR, 6/2) fine to coarse SAND, trace Gravel, trace Silt, wet | | ND | | | | FILL | |
| 5 | S-5 | 8-10 | 24 | 4 | 12 7 7 7 | S-5 : Medium dense, gray (GLE Y 1, 5/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, moderate oil-like odor, slight sheen, wet | 3 | 66 | | Mod | | | |
| 6 | S-6 | 10-12 | 24 | 1 | 15 8 9 8 | S-6 : Medium dense, gray (GLE Y 1, 5/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, moderate oil-like odor, slight sheen, wet | | 51 | | Mod | | | |
| 7 | S-7 | 12-14 | 24 | 15 | 19 20 15 14 | S-7 : Dense, gray (GLE Y 1, 5/10YR) fine to coarse SAND, little (+) Gravel, trace (+) Silt, moderate oil-like odor, slight sheen, wet | | 341 | | Mod | 12 | 1.8 | ← Filter Sand |
| 8 | S-8 | 14-16 | 24 | 9 | 15 11 10 9 | S-8 : Medium dense, gray (GLE Y 1, 5/10YR) fine to coarse SAND, little (+) Gravel, trace (+) Silt, moderate oil-like odor, slight sheen, wet | | 604 | | | | SAND AND SILT | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 6.5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-303D**

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:10 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-303D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 14 | 6 4 4 8 | S-9 : Loose, gray/tan (10YR, 5/1) fine SAND, trace (+) Silt, wet | ND | | Mod | | | | |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 18 | 3 5 4 3 | S-10 : Loose, gray/tan (10YR, 5/1) fine (+) to medium SAND, trace (+) Silt, slight oil-like odor, wet | 6 | | | | 18 | -4.2 | Filter Sand |
| 19 | | | | | | | 4 | | Sigt | | | | Bentonite Seal |
| 20 | S-11 | 20-22 | 24 | 16 | 5 5 5 4 | S-11 : Medium dense, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet | ND | | | | | | Filter Sand |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 18 | 5 6 6 9 | S-12 : Medium dense, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet | ND | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 17 | 11 7 7 10 | S-13 : Medium dense, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet | ND | | | | | | |
| 25 | | | | | | | | | | | 25 | -11.2 | Well Screen |
| 26 | S-14 | 26-28 | 24 | 19 | 5 4 4 5 | S-14 : 0-15" Gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet 15"-19" Tan/gray (10YR, 5/1) fine (+) to medium SAND, trace Silt, wet | ND | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 17 | 6 7 8 11 | S-15 : Medium dense, tan/gray (10YR, 5/1) fine (+) to medium SAND, trace Silt, wet | ND | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -16.2 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-3 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-303D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-303S
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
 Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.78
Final Boring Depth (ft.): 15
Date Start - Finish: 5/22/2014 - 5/28/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/30/14 | NM | 6.65 | 2 Days |
| 6/3/14 | NM | 6.63 | 6 Days |
| 6/11/14 | 14:20 | 6.52 | 14 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 0-15 | | | | | | : None/Refer to GZ-303D | | | | | | | | |
| 1 | | | | | | | 1 | | | | | | | ← Road Box |
| 2 | | | | | | | 2 | | | | | | | |
| 3 | | | | | | | | | | | | | | ← PVC Riser |
| 4 | | | | | | | | | | | | | | ← Bentonite Seal |
| 5 | | | | | | | | | | | | | | ← Filter Sand |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | Mod | | | | | |
| 10 | | | | | | | | | Mod | | | | | |
| 11 | | | | | | | | | Mod | | | | | |
| 12 | | | | | | | | | Mod | | | | | |
| 13 | | | | | | | | | Mod | | 13 | 0.8 | | |
| 14 | | | | | | | | | Mod | | | | | |
| 15 | | | | | | | | | Mod | | 15 | -1.2 | | ← Well Screen |

REMARKS

1 - No sampling completed at this location. See GZ-303D for sampling details. Stratum and impact descriptions inferred from GZ-303D.
 2 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-15 feet bgs; Bentonite Seals installed from 3-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-303S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-304D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MB/SN/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.78
Final Boring Depth (ft.): 30
Date Start - Finish: 5/21/2014 - 5/24/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 6.66 | 5 Days |
| 6/3/14 | NM | 6.50 | 10 Days |
| 6/13/14 | NM | 6.44 | 20 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed | |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, dry 6"-24" Black (10YR, 2/1) fine SAND, little Ash, trace Silt, trace Gravel, trace Slag, dry | 1 2 | ND ND | | | | | ← Road Box | |
| | | | | | | | | | | | | | | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine SAND, little Ash, trace Silt, trace Gravel, trace Slag, dry | 0.7 | | | | | | | ← Bentonite Seal |
| 3 | | | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine SAND, little Ash, trace (+) Slag, trace (+) Brick, trace Silt, trace Gravel, moist | 1 | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 8 | 1 2 3 1 | S-4 : Very loose, gray (GLEY 1, 4N) fine to coarse SAND, little Silt, trace (+) Gravel, trace Brick, slight Coal tar-like odor, wet | 13 | | | Sigt | | FILL | | ← Filter Sand |
| 7 | | | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 12 | 5 5 6 7 | S-5 : Medium dense, tan (2.5YR, 4/2) fine to coarse SAND, little Gravel, trace Silt, trace Brick, strong Coal tar-like odor, wet | 3 | 48 | | | | | | |
| 9 | | | | | | | 4 | | | Strg | | | | |
| 10 | S-6 | 10-12 | 24 | 18 | 5 6 7 7 | S-6 : Medium dense, gray (GLEY 1, 5/10YR) fine to coarse SAND, little (-) Gravel, trace Silt, slight Coal tar-like odor, wet | 6 | | | Sigt | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 5 | 8 5 7 8 | S-7 : Medium dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (-) Gravel, trace Silt, moderate oil-like and Coal tar-like odor, slight sheen, wet | 66 | | | Mod | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 1 | 7 4 2 2 | S-8 : Loose, gray (GLEY 1, 4/N) fine to coarse SAND, strong Coal tar-like odor, Coal tar saturated, wet | 14 | | | | | | | |
| 15 | | | | | | | | | | | | | | |

REMARKS
 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 6.5 feet bgs.
 4 - Coal tar saturated lense observed between 9 and 10 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-304D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:12 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-304D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Depth(ft.) Description Elev.(ft.) | Equipment Installed | |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---|---------------------|--|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 12 | 3 3 3 3 | S-9 : 0-6" Gray (GLEY 1, 5/10Y) fine to coarse SAND, little Silt, trace Silt, wet 6-12" Gray (GLEY 1, 5/10Y) fine SAND, little (+) Silt, wet | | 1.5 | | | | | |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 0 | 4 2 1 1 | S-10 : Very loose, no recovery | | NM | | | | | |
| 19 | | | | | | | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 24 | WOH | S-11 : Very loose, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, trace Shell fragments, wet | 5 | 0.5 | | | 20 | -6.2 | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 24 | 1 WOH 1 1 | S-12 : Very loose, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, trace Shell fragments, wet | | 0.7 | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 22 | 1 1 1 1 | S-13 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 18 | WOH | S-14 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | WOH | S-15 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -16.2 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS
 5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-3 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-304D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:12 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-305S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.89
Final Boring Depth (ft.): 20
Date Start - Finish: 5/21/2014 - 5/22/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 5/29/14 | NM | 6.72 | 7 Days |
| 6/3/14 | NM | 6.77 | 12 Days |
| 6/13/14 | NM | 6.65 | 22 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|---|---------------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1: 0-6" Dark brown (10YR, 3/3) fine SAND and SILT, trace Gravel, trace Roots, dry 6"-24" Black (10YR, 2/1) fine SAND, some Silt, some Ash, trace Gravel, dry | 1 2 | 0.9 4.6 | | | | ← Road Box |
| | | | | | | | | | | | | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2: Black (10YR, 2/1) fine SAND, some Silt, some Ash, trace Gravel, dry | | 0.6 | | | | ← PVC Riser ← Bentonite Seal |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3: Black (10YR, 2/1) fine SAND, some Silt, some Ash, little Brick, trace Gravel, moist | | 0.6 | | | | ← Filter Sand |
| 5 | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 8 | 20 9 9 7 | S-4: Medium dense, gray (GLEY 1, 3/N) fine to coarse SAND, trace Gravel, trace (-) Silt, trace Brick, wet | | 4 | | | | |
| 7 | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 8 | 9 11 12 9 | S-5: Medium dense, gray (GLEY 1, 3/N) fine to coarse (+) SAND, little Gravel, trace Silt, moderate oil-like odor, slight sheen, wet | 3 | 186 | | Mod | | |
| 9 | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 8 | 13 12 4 4 | S-6: 0-4" Gray (GLEY 1, 3/N) fine to coarse (+) SAND, little Gravel, trace Silt, moderate oil-like odor, slight sheen, wet 4"-8" Gray (GLEY 1, 3/N) fine SAND little Silt, moderate oil-like odor, slight sheen, wet | | 142 | | Mod | | ← Well Screen |
| 11 | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 14 | 12 10 26 26 | S-7: Dense, gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace Silt, moderate oil-like odor, slight sheen, wet | | 85 | | Mod | | |
| 13 | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 9 | 26 19 26 16 | S-8: Dense, gray (GLEY 1, 2.5/N) fine to coarse SAND, little (-) Gravel, trace Silt, slight oil-like odor, wet | | 2 | | | | |
| 15 | | | | | | | | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-305S**

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:13 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-305S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------------------------------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 8 | 5 5 | S-9 : 0-2" Gray (GLEY 1, 2.5/N) fine to coarse SAND, little (-) Gravel, trace Silt, slight oil-like odor, wet | 4 | 0.5 | | Sigt | FILL | -4.1 | Filter Sand |
| 17 | | | | | 5 5 | | | | | | 2"-8" Gray (GLEY 1, 4/N) fine SAND, little (+) Silt, trace Shell, wet | | |
| 18 | S-10 | 18-20 | 24 | 20 | 2 2 | S-10 : Loose, gray (GLEY 1, 4/N) fine SAND, little (+) Silt, trace Shell, wet | 0.4 | | | | SAND AND SILT/POSSIBLE ORGANIC SILT | -8.1 | |
| 19 | | | | | 2 2 | | | | | | | | |
| 20 | End of exploration at 20 feet. | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | |
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| 33 | | | | | | | | | | | | | |

REMARKS

4 - 5 feet of casing was lost in the borehole from 9 to 14 feet bgs. The boring was aborted and resumed two feet to the north of the original location. The location was excavated via vacuum prior to resuming.
5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-20 feet bgs; Bentonite Seals installed from 2-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-305S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-306S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.90
Final Boring Depth (ft.): 20
Date Start - Finish: 5/21/2014 - 5/22/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/19/14 | NM | 6.50 | 7 Days |
| 6/3/14 | NM | 6.56 | 12 Days |
| 6/13/14 | NM | 6.47 | 22 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|---|---------------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, dry 6"-24" Black (10YR, 2/1) fine SAND, some Ash, little Silt, trace Gravel, dry | 1 2 | ND 10 | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine SAND, some Ash, little Silt, trace Gravel, trace Brick, trace glass, dry | | 32 | | | | ← PVC Riser ← Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine SAND, some Ash, little Silt, trace Gravel, trace Brick, trace glass, dry | | 9 | | | | ← Filter Sand |
| 4 | S-4 | 6-8 | 24 | 12 | 41 11 23 24 | S-4 : Dense, gray (GLE Y 1, 2.5/N) fine to coarse SAND, trace Gravel, trace Silt, slight oil-like odor, slight sheen, wet, 4" lense of coal tar saturation present at 7.5 feet bgs with Coal tar-like odor | | 191 | Mod | | FILL | |
| 5 | S-5 | 8-10 | 24 | 16 | 20 6 5 6 | S-5 : Medium dense, gray (GLE Y 1, 2.5/N) fine to coarse SAND, trace Gravel, trace Silt, slight sheen, slight oil-like odor, wet | 3 | 637 | Sigt | | | |
| 6 | S-6 | 10-12 | 24 | 12 | 4 4 5 4 | S-6 : Loose, gray (GLE Y 1, 2.5/N) fine (+) to coarse SAND, little Silt, slight sheen, slight oil-like odor, wet | | 132 | Sigt | | | ← Well Screen |
| 7 | S-7 | 12-14 | 24 | 15 | 6 6 10 8 | S-7 : Medium dense, gray (GLE Y 1, 2.5/N) fine (+) to coarse SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet | | 47 | Sigt | | | |
| 8 | S-8 | 14-16 | 24 | 9 | 13 6 2 1 | S-8 : 0-4" Gray (GLE Y 1, 2.5/N) fine (+) to coarse SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet 4"-9" Gray (GLE Y 1, 4/N) fine SAND, some Silt, | | 11 | Sigt | | | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-306S**

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE: 12/28/2015; 2:41:15 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-306S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|-------------------------------------|-------------|----------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 6 | 5 16 9 3 | S-9 : 0-3" Gray (GLEY 1, 4/N) fine SAND, some Silt, wet 3"-6" Gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace Silt, wet | | 2 | | | FILL | 16 -4.1 | <p>← Filter Sand</p> |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 22 | 2 1 2 1 | S-10 : Very loose, gray (GLEY 1, 4/N) fine SAND, some (+) Silt, wet | | 0.4 | | | SAND AND SILT/POSSIBLE ORGANIC SILT | | |
| 19 | | | | | | | 4 | | | | | | |
| 20 | | | | | | End of exploration at 20 feet. | | | | | | 20 -8.1 | |
| 21 | | | | | | | | | | | | | |
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| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-20 feet bgs; Bentonite Seals installed from 2-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-306S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-307S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.7
Final Boring Depth (ft.): 20
Date Start - Finish: 5/19/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 4.65 | 10 Days |
| 6/3/14 | NM | 4.84 | 15 Days |
| 6/6/14 | NM | 4.82 | 18 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|---|---|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-2" Black (10YR, 2/1) ASPHALT 2"-8" Brown (10YR, 5/6) fine to medium SAND, trace Gravel, trace Silt, dry 8"-24" Black (10YR, 2/1) fine to medium SAND, little Ash, trace Coal, trace Slag, dry | 1 2 | NM ND | | | | ← Road Box |
| | | | | | | | | | | | | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Pale brown (10YR, 6/3) fine SAND, some Silt, trace Gravel, moist | | ND | | | | ← Bentonite Seal PVC Riser Filter Sand |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Dark gray (10YR, 4/2) fine SAND and SILT, trace Gravel, moderate oil-like odor, wet | | 506 | | Mod | | |
| 5 | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 12 | 1 1 1 2 | S-4 : Dark gray (10YR, 4/2) fine to coarse SAND, some Silt, little Gravel, slight sheen, oil-like saturation, moderate to strong oil-like odor, wet | | 334 | | Strg | | |
| 7 | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 8 | 1 1 1 1 | S-5 : Dark gray (10YR, 4/2) fine to coarse SAND, little Silt, little Gravel, sheen oil-like coating and bands of saturation, strong oil-like odor, wet | 3 | 487 | | Strg | FILL | ← Well Screen |
| 9 | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 6 | 2 3 1 1 | S-6 : Dark gray (10YR, 4/2) fine to coarse SAND, little Silt, little Gravel, sheen oil-like coating and bands of saturation, strong oil-like odor, wet | | 717 | | Strg | | |
| 11 | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 8 | 5 3 3 1 | S-7 : Dark gray (10YR, 4/2) fine to coarse SAND, little (+) Gravel, trace (+) Silt, sheen, moderate oil-like odor, oil-like coating and bands of saturation, wet | | 438 | | Strg | | |
| 13 | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 8 | 5 4 6 5 | S-8 : Dark gray (10YR, 4/2) fine to coarse SAND, little (+) Gravel, trace (+) Silt, sheen, moderate oil-like odor, oil-like cocating and bands saturation, wet | | 408 | | | | |
| 15 | | | | | | | | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-307S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:16 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-307S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Depth(ft.) Description Elev.(ft.) | Equipment Installed | |
|------------|--------|-------------|-----------|-----------|-----------------|--|-------------|-----------------|--------|------|---|---|---------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 14 | 1 1 | S-9 : 0-6" Gray (10YR, 4/1) fine SAND and SILT, little Gravel, wet, slight oil-like odor 6"-10: Black (10YR, 2/1) fine to medium SAND, some Silt, trace Gravel, trace wood, trace Organics, wet 10"-14" Gray (10YR, 5/1) fine SAND, some Silt, trace Shells, trace Organics, wet | 156 20 4 | | | Strg | 16 | FILL SAND AND SILT/POSSIBLE ORGANIC SILT | ← Filter Sand |
| 17 | | | | | 1 1 | | | | | | 16 | | |
| 18 | S-10 | 18-20 | 24 | 10 | 5 3 | S-10 : Gray (10YR, 5/1) fine SAND, some Silt, trace Shells, trace Organics, wet | ND | | | | 20 | -9.3 | |
| 19 | | | | | 2 2 | | | | | | | | |
| 20 | | | | | | End of exploration at 20 feet. | | | | | | | |
| 21 | | | | | | | | | | | | | |
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| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 13 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-3 feet bgs; Filter Sand placed in annulus from 2-20 feet bgs; Bentonite Seals installed from 1-2 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox. Well was installed on 5/19/14 using hollow stem augers. Well installed three feet to the north of the boring location.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-307S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:17 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-308S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 19.71
Final Boring Depth (ft.): 22
Date Start - Finish: 5/19/2014 - 6/4/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 2.76 | 10 Days |
| 6/3/14 | NM | 2.98 | 15 Days |
| 6/6/14 | NM | 2.97 | 18 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------|------------------------------------|--|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-3" Black (10YR, 2/1) ASPHALT 3"-24" Dark brown (10YR, 2.2) fine to medium SAND, little Gravel, trace Ash, trace Silt, dry | 1 2 | NM | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Brown (10YR, 4/3) fine SAND, little Silt, trace Gravel, moist | | 0.9 | | | | | ← Bentonite Seal ← PVC Riser ← Filter Sand |
| 4 | S-3 | 4-6 | 24 | 0 | 1 2 1 2 | S-3 : Loose soils-no recovery | | NM | | | | | |
| 6 | S-4 | 6-8 | 24 | 7 | 4 2 1 2 | S-4 : Loose, dark gray (10YR, 4/1) fine to coarse SAND, little Gravel, little (+) Silt, wet, sheen, bands of oil saturation, moderate to strong oil-like odor | | 536 | | Strg | | | |
| 8 | S-5 | 8-10 | 24 | 0 | 6 4 3 2 | S-5 : Loose soils-no recovery, sheen on spoon | 3 | NM | | | | FILL | |
| 10 | S-6 | 10-12 | 24 | 0 | 2 1 2 1 | S-6 : Loose soils-no recovery, sheen on spoon | | NM | | | | | |
| 12 | S-7 | 12-14 | 24 | 12 | 4 2 1 2 | S-7 : Loose, dark gray (10YR, 4/1) fine to medium SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | | 53 | | Sigt | | | |
| 14 | S-8 | 14-16 | 24 | 0 | 3 2 1 2 | S-8 : Loose soils-no recovery, sheen on spoon | | NM | | | | | ← Well Screen |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-308S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:18 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-308S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|----------------------------|-------------|----------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 20 | 4 2 1 2 | S-9 : Loose, gray (10YR, 5/2) SAND and SILT, trace Organics, trace Shells, wet | | 27 | | | FILL | 3.7 | <p>← Filter Sand</p> |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 3 | 2 2 5 6 | S-10 : Loose, gray (10YR, 5/2) SAND and SILT, trace Organics, trace Shells, wet | | 13 | | | ORGANIC SILT/SAND AND SILT | | |
| 19 | | | | | | | 4 | | | | | | |
| 20 | S-11 | 20-22 | 24 | 24 | 3 2 3 5 | S-11 : Loose, gray (10YR, 5/2) SILT and SAND, trace Organics, trace Shells, trace wood, trace Fibers, wet | | 7 | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | End of exploration at 22 feet. | | | | | | -2.3 | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 12 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-2 feet bgs; Filter Sand placed in annulus from 2-22 feet bgs; Bentonite Seals installed from 0.5-1.5 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox. Well was installed on 5/19/14 using hollow stem augers. Well was installed approximately five feet to the south of the boring location.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-308S

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-309D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.51
Final Boring Depth (ft.): 30
Date Start - Finish: 5/19/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 2.73 | 9 Days |
| 6/16/14 | NM | 4.11 | 17 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-3" Black (10YR, 2/1) ASPHALT 3"-24" Dark gray (10YR, 4/1) fine to medium SAND, trace Gravel, trace Silt, trace Ash, dry | 1 2 | NM 0.2 | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/4) fine SAND, some Silt, trace Gravel, dry | | 0.3 | | | | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Yellow brown (10YR, 5/4) fine SAND, some Silt, trace Gravel, dry | | 0.3 | | | | | |
| 4 | S-4 | 6-8 | 24 | 14 | 4 2 1 1 | S-4 : Loose, gray (10YR, 4/2) fine SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | | 263 | Mod | | | | |
| 5 | S-5 | 8-10 | 24 | 15 | 1 4 4 2 | S-5 : Loose, gray (10YR, 4/2) fine SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | 3 | 281 | Mod | | | | |
| 6 | S-6 | 10-12 | 24 | 1 | 4 2 1 1 | S-6 : Loose, black (10YR, 2/1) fine SAND, little Silt, little Gravel, little Coal, wet, oil-like staining, slight oil-like odor | | 90 | Sigt | | | | |
| 7 | S-7 | 12-14 | 24 | 3 | 1 1 1 1 | S-7 : Very loose, black (10YR, 2/1) fine SAND, little Silt, little Gravel, little Coal, wet, oil-like staining | | 10 | | | | | ← Filter Sand |
| 8 | S-8 | 14-16 | 24 | 15 | 4 2 3 1 | S-8 : Loose, gray (10YR, 4/1) fine to Medium SAND, little Silt, little Gravel, wet | | 7.1 | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-309D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:20 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-309D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 4 | 1 1 1 1 | S-9 : very loose, gray (10YR, 4/2) fine to coarse SAND, little Gravel, trace (+) Silt, wet, slight oil-like odor | | | | | | FILL | | ← Filter Sand |
| 17 | | | | | | | | | | Sigt | | | | |
| 18 | S-10 | 18-20 | 24 | 15 | 2 1 1 2 | S-10 : Very soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Roots, trace Shells, wet | | | | | 18 | -7.5 | | ← Bentonite Seal |
| 19 | | | | | | | 4 | | | | | | | ← Filter Sand |
| 20 | S-11 | 20-22 | 24 | 18 | 1 2 1 1 | S-11 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 2 1 1 2 | S-12 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 20 | 1 1 1 1 | S-13 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | ORGANIC SILT | | |
| 25 | | | | | | | | | | | | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 20 | 2 1 1 1 | S-14 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 20 | 1 1 1 1 | S-15 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -19.5 | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-309D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-310
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.76
Final Boring Depth (ft.): 30
Date Start - Finish: 5/25/2014 - 5/28/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------|---|------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Light brown (10YR, 4/2) fine to coarse SAND, some Gravel, trace (+) Silt, trace Brick, trace Asphalt, trace Concrete, dry | 1 2 | ND | | | | | | No Equipment Installed |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) fine to coarse SAND, little Gravel, trace Silt, trace Brick, trace Ash, trace Slag, moist | | ND | | | | | | |
| 3 | S-3 | 4-6 | 24 | 0 | 6 8 8 2 | S-3 : Medium dense, granular soils-no recovery | | NM | | | | FILL | | |
| 4 | S-4 | 6-8 | 24 | 12 | 5 4 3 2 | S-4 : 0-2" Black (10YR, 2/1) WOOD, wet, slight coal tar-like odor, slight sheen, stained 2"-12" Blue (GLEYS, 5/5) SILT and SAND, trace Wood, wet | | 40 13 | | Sght | | | | |
| 5 | S-5 | 8-10 | 24 | 24 | 6 18 7 20 | S-5 : 0-12" Black (10YR, 2/1) SAND and SILT, little Organics, trace Wood, trace Gravel, wet, slight coal tar-like odor, coal tar bands of saturation 12"-24" Gray (10YR, 4/1) fine to medium SAND, little Silt, trace Gravel, trace Organics, wet, slight coal tar-like odor | 3 | 201 106 | | Sght | | | | |
| 6 | S-6 | 10-12 | 24 | 18 | 4 1 1 1 | S-6 : Loose, gray (10YR, 5/1) fine to medium SAND, some Silt, trace Gravel, trace Organics, wet | | 1 | | | 10 | -0.2 | | |
| 7 | S-7 | 12-14 | 24 | 0 | 1 1 1 1 | S-7 : Loose, granular soils-no recovery | | NM | | | | Possible FILL/POSSIBLE ORGANIC SILT | | |
| 8 | S-8 | 14-16 | 24 | 14 | 1 1 1 1 | S-8 : Loose, gray (10YR, 5/1) fine to medium SAND, some Silt, trace Gravel, trace Organics, wet | | 1 | | | | | | |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-310

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:21 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-310
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|-------------------------------------|------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 24 | 1 1 1 1 | S-9 : 0-20" Gray (10YR, 5/1) fine to medium SAND, some Silt, trace Gravel, trace Organics, wet 20"-24" Black (10YR, 2/1) fine to medium SAND, little Silt, little Organics, trace Gravel, wet | | 1 3.5 | | | Possible FILL/POSSIBLE ORGANIC SILT | | |
| 17 | | | | | | | | | | | 17 | -7.2 | |
| 18 | S-10 | 18-20 | 24 | 24 | 1 1 1 1 | S-10 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | |
| 19 | | | | | | | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 12 | 1 1 1 1 | S-11 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 18 | 1 1 1 1 | S-12 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 24 | 1 1 1 1 | S-13 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | ORGANIC SILT | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 24 | 1 1 1 1 | S-14 : Soft, dark gray (10YR, 4/1), ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | 1 1 1 1 | S-15 : Soft, dark gray (10YR, 4/1), ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -20.2 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-310

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-311D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.03
Final Boring Depth (ft.): 30
Date Start - Finish: 5/19/2014 - 5/21/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 5/29/14 | NM | 4.74 | 8 Days |
| 6/6/14 | 10:08 | 4.89 | 16 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Groundwater Depth (ft.) | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------------|-----------------|--------|------|-------------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Elev. (ft.) | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10YR, 4/4) GRAVEL, some fine to medium Sand, trace Silt, dry | 1 2 | ND | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) GRAVEL, some fine to medium Sand, some Slag, trace Silt, moist | | ND | | | | | |
| 4 | S-3 | 4-6 | 24 | 12 | 14 10 11 11 | S-3 : Medium dense, gray brown (10YR, 4/2) fine to coarse SAND, some (+) Gravel, little Slag, trace (+) Silt, Wet | | ND | | | | | |
| 6 | S-4 | 6-8 | 24 | 12 | 14 11 13 9 | S-4 : Medium dense, gray brown (10YR, 4/2) fine to coarse SAND, some (+) Gravel, little Slag, trace (+) Silt, Wet | | ND | | | | | |
| 8 | S-5 | 8-10 | 24 | 20 | 1 1 2 1 | S-5 : Loose, gray (10YR, 5/2) fine to medium SAND, little Gravel, little Silt, trace Slag, wet | 3 | 10.4 | | | | | |
| 10 | S-6 | 10-12 | 24 | 20 | 1 1 1 1 | S-6 : 0-10" Black (10YR, 2/1) fine SAND and SILT, some Organics, slight oil-like odor, wet 10"-20" Gray (10YR, 6/2) fine SAND and SILT, trace Gravel, slight to moderate blue staining, slight oil-like odor, wet | 12.2 16.5 | | | | 10 0.0 | | |
| 12 | S-7 | 12-14 | 24 | 12 | 1 1 3 3 | S-7 : Very loose, gray (10YR, 4/1) fine SAND and SILT, trace Gravel, slight blue staining, slight oil-like odor, wet | 6.8 | | | | | | Filter Sand |
| 14 | S-8 | 14-16 | 24 | 16 | 8 27 20 11 | S-8 : Dense, gray black (10YR, 3/1) fine to medium SAND, some Silt, little Gravel, trace Roots, slight oil-like odor, wet | 49 | | | | | | |

REMARKS

1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-311D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-311D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|--------|-------------------------------------|-------------|-----------------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 6 | 5 4 4 5 | S-9 : Loose, gray (10YR, 4/2) fine SAND and SILT, trace Gravel, trace Roots, wet, Slight oil-like odor | | 23.5 | | Slight | | | |
| 17 | | | | | | | | | | | Possible FILL/POSSIBLE ORGANIC SILT | | ← Bentonite Seal ← Filter Sand |
| 18 | S-10 | 18-20 | 24 | 10 | 3 1 2 3 | S-10 : Very loose, black (10YR, 2/1) fine SAND and SILT, trace Gravel, trace Roots, wet, slight oil-like odor | | 10 | | Slight | | | |
| 19 | | | | | | | 4 | | | | | | ← Filter Sand |
| 20 | S-11 | 20-22 | 24 | 1 | 4 1 1 2 | S-11 : 0-3" Black (10YR, 2/1) ORGANIC SILT, trace Gravel, trace Roots, wet, slight oil-like odor 3"-4" Gray (10YR, 4/2) ORGANIC SILT, wet | | 1.2 ND | | Slight | | 20 -10.0 | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 8 | 1 2 1 3 | S-12 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, wet | | ND | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 22 | 1 1 1 1 | S-13 : Very soft, gray (10 YR 4/2) ORGANIC SILT, trace Gravel, trace Shells, wet | | ND | | | | | |
| 25 | | | | | | | | | | | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 26 | 3 1 2 3 | S-14 : Very soft, gray (10 YR 4/2) ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | 1 1 1 1 | S-15 : Very soft, gray (10 YR 4/2) ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | | 30 -20.0 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 18-30 feet bgs; Bentonite Seals installed from 16-18 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-311D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-312D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 8.55
Final Boring Depth (ft.): 30
Date Start - Finish: 5/23/2014 - 5/23/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 5/29/17 | NM | 4.59 | 6 Days |
| 6/6/14 | 10:15 | 4.61 | 14 Days |
| 6/10/14 | 8:05 | 4.16 | 18 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10YR, 4/4) fine to coarse SAND, little Gravel, trace (+) Silt, trace Brick, trace Roots, dry | 1 2 | ND | | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) fine to coarse SAND, little Gravel, trace (+) Silt, trace (+) Ash, trace Brick, trace Slag, moist | | ND | | | | FILL | | Bentonite Seal |
| 3 | | | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | 24 | 7 | 7 4 1 2 | S-3 : Loose, tan (10YR, 4/1) fine (+) to coarse SAND< little (-) Silt, trace (-) Gravel, slight oil-like odor, wet | | 15 | | Sigt | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 8 | 3 3 3 3 | S-4 : Loose, gray (GLEY 1, 3/10Y) fine (+) to coarse SAND, little Silt, trace (-) Gravel, moderate oil-like odor, slight sheen, wet | | 955 | | Mod | 6 | 2.6 | | PVC Riser |
| 7 | | | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 0 | 6 2 1 1 | S-5 : No recovery, loose granular soil | 3 | NM | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 0 | WOH 1 1 | S-6 : No recovery, loose granular soil | | NM | | | | Possible FILL | | |
| 11 | | | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 4 | 3 4 4 3 | S-7 : Loose, gray (GLEY 1, 3/N) fine SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet | | 33 | | Sigt | | | | Bentonite Seal |
| 13 | | | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 10 | 5 6 6 3 | S-8 : 0-6" Gray (GLEY 1, 3/N) fine SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet | | 7 | | Sigt | | | | |
| 15 | | | | | | 6"-10" Gray (GLEY 1, 4/N) fine SAND, little Silt, | | | | | 15 | -6.5 | | |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-312D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:24 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-312D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth(ft.) | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|--------|------------|---------------------|------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 18 | WOH 1 2 | S-9 : Very soft, gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 3 | | Slight | | | | ← Filter Sand |
| 17 | | | | | | | | | | Slight | | | | |
| 18 | S-10 | 18-20 | 24 | 16 | 1 1 1 3 | S-10 : Very soft, gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, wet | | 1.2 | | | | ORGANIC SILT | | |
| 19 | | | | | | | 4 | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 16 | 1 1 1 3 | S-11 : Very soft, gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, wet | | 0.4 | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 3 6 6 7 | S-12 : 0-5" Gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, wet 5"-20" Gray (GLEY 1, 4/N) fine to coarse SAND, little (+) Silt, trace Gravel, trace Shells, wet | | 0.2 | | | 22 | -13.5 | | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 6 | 21 24 13 13 | S-13 : Dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (+) Gravel, trace Silt, wet | | 0.4 | | | | | | |
| 25 | | | | | | | | | | | | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 5 | 9 8 8 11 | S-14 : Medium dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (+) Gravel, trace Silt, wet | | 0.2 | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 10 | 15 13 12 14 | S-15 : Medium dense, tan (10YR, 5/6) fine to coarse SAND, little (+) Gravel, trace (+) Silt, wet | | 0.6 | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -21.5 | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 14-30 feet bgs; Bentonite Seals installed from 1-2 and 13-14 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-312D**

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-312S
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 8.55
Final Boring Depth (ft.): 13
Date Start - Finish: 5/23/2014 - 5/23/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 5/29/14 | NM | 4.07 | 6 Days |
| 6/16/14 | 10:12 | 4.20 | 14 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 0-13 | | | | | | : None/Refer to GZ-312D | 1 | | | | | | | Stand Pipe |
| 1 | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | Bentonite Seal |
| 3 | | | | | | | | | | | | | | PVC Riser |
| 4 | | | | | | | | | | | | | | Filter Sand |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | Sigt | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | Mod | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | 2 | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | Sigt | | | | Well Screen |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |

REMARKS

1 - No sampling completed at this location. See GZ-312D for sampling details. Stratum and impacts descriptions inferred from GZ-312D.
 2 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 13 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-3 feet bgs; Filter Sand placed in annulus from 2-13 feet bgs; Bentonite Seals installed from 1-2 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-312S**

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 1 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.78
Final Boring Depth (ft.): 36
Date Start - Finish: 5/19/2014 - 5/27/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 5/29/14 | NM | 8.49 | 2 Days |
| 6/10/14 | 7:55 | 7.23 | 14 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Red-brown (10YR, 4/4) fine to coarse SAND, little Slag, trace Ash, trace Silt, dry | 1 2 | 0.4 | | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/4) fine SAND, little Silt, trace Gravel, moist | | 0.1 | | | | | | Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Yellow brown (10YR, /4) fine SAND, little Silt, trace Gravel, slight oil-like odor, moist/wet | | 22 | | Sigt | | FILL | | |
| 4 | S-4 | 6-8 | 24 | 5 | WOH 1 1 11 | S-4 : Very loose, gray (GLEY 1, 4/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, wet | | 3 | | | | | | |
| 5 | S-5 | 8-10 | 24 | 0 | WOH 1 3 4 | S-5 : Loose, granular soil, no recovery | | 3 | NM | | | | | |
| 6 | S-6 | 10-12 | 24 | 21 | 6 1 5 6 | S-6 : Loose, gray (GLEY 1, 3/N) fine (+) to coarse SAND, little Silt, trace Gravel, slight oil-like odor, slight sheen, wet | | 242 | | Sigt | | | 10 -0.2 | |
| 7 | S-7 | 12-14 | 24 | 13 | 9 8 9 9 | S-7 : Medium dense, gray (GLEY 1, 3/N) fine (+) to coarse SAND, little Silt, trace Gravel, slight oil-like odor, slight sheen, wet | | 108 | | Sigt | | Possible Fill/Sands | | PVC Riser |
| 8 | S-8 | 14-16 | 24 | 110 | 8 9 4 3 | S-8 : Medium dense, gray (GLEY 1, 3/N) fine to coarse SAND, little (-) Gravel, little (-) Silt, slight oil-like odor, slight sheen, wet | | 104 | | | | | | Filter Sand |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:26 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 2 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|---------------------|-------------|----------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Description | |
| 16 | S-9 | 16-18 | 24 | 6 | 4 5 | S-9 : Medium dense, gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, slight sheen, wet | | 205 | Slight | | | | |
| 17 | | | | | 8 6 | | | | | | | | Slight |
| 18 | S-10 | 18-20 | 24 | 8 | 6 27 | S-10 : Very dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, slight sheen, wet | 4 | 252 | Slight | | | | |
| 19 | | | | | 37 22 | | | | | | | | Slight |
| 20 | S-11 | 20-22 | 24 | 9 | 10 8 | S-11 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, wet | | 67 | | Possible Fill/Sands | | | |
| 21 | | | | | 3 3 | | | | | | | | Slight |
| 22 | S-12 | 22-24 | 24 | 1 | 5 7 | S-12 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, wet | | 32 | | | | | |
| 23 | | | | | 7 1 | | | | | | | | Slight |
| 24 | S-13 | 24-26 | 24 | 4 | 15 12 | S-13 : Dense, gray (GLEY 1, 3/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, wet | | 48 | | | | Bentonite Seal | |
| 25 | | | | | 18 15 | | | | | | | | Slight |
| 26 | S-14 | 26-28 | 24 | 9 | 14 18 | S-14 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, wet | | 3 | | 26 | -16.2 | | |
| 27 | | | | | 9 9 | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 8 | 9 6 | S-15 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace (+) Gravel, trace (+) Silt, wet | | 3 | | | | Well Screen | |
| 29 | | | | | 5 4 | | | | | | | | |
| 30 | S-16 | 30-32 | 24 | 2 | 6 5 | S-16 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace Gravel, trace Silt, wet | | 0.5 | | | | | |
| 31 | | | | | 7 6 | | | | | | | | |
| 32 | S-17 | 32-34 | 24 | 12 | 6 6 | S-17 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace Gravel, trace Silt, wet | | 2 | | | | Filter Sand | |
| 33 | | | | | 12 16 | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 36 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-26 feet bgs; Filter Sand placed in annulus from 0-2, 3-24 and 25-36 feet bgs; Bentonite Seals installed from 2-3 and 24-25 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

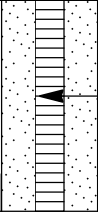
TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 3 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 34 | S-18 | 34-36 | 24 | 11 | 15 13 18 18 | S-18 : Dense, gray (GLEY 1, 5/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | 1 | | | | | |  Well Screen |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | End of exploration at 36 feet. | | | | | 36 | | -26.2 | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-314D
SHEET: 1 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.13
Final Boring Depth (ft.): 34
Date Start - Finish: 5/27/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 6/4/14 | 11:00 | 8.99 | 1 Day |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|-------------|-----------------|--------|------|---|--------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Gray brown (10YR, 5/2) fine SAND, little Gravel, little Silt, dry, moderate oil-like odor | 1 2 3 | 61.2 | | | CRUSHED STONE 10.9 | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine to coarse SAND, little Gravel, little Silt, trace Brick, trace Slag, oil-like staining, moderate oil-like odor, moist | | 108 | | Mod | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine to coarse SAND, little Gravel, little Silt, trace Brick, trace Slag, oil-like staining, moderate oil-like odor, moist | | 175 | | Mod | | |
| 4 | S-4 | 6-8 | 24 | 8 | 15 16 15 9 | S-4 : Dense, light gray (GLE Y 1, 7/N) fine to medium SAND, some Gravel, trace Silt, slight oil-like odor, wet | 4 | 9 | | Sigt | | |
| 5 | S-5 | 8-10 | 24 | 11 | 7 6 6 9 | S-5 : Medium dense, very dark brown (10YR, 3/1) fine to coarse SAND and GRAVEL, little Silt, slight oil-like odor, wet | | 26 | | Sigt | FILL | |
| 6 | S-6 | 10-12 | 24 | 6 | 4 4 WOH 1 | S-6 : Loose, dark grayish brown (10YR, 4/2) fine to medium SAND, little Silt, trace Gravel, trace Brick, wet | | 3.6 | | | | |
| 7 | S-7 | 12-14 | 24 | 1 | 3 5 11 7 | S-7 : Medium dense, black (10YR, 2/1) fine SAND and SILT, strong oil-like odor, oil-like staining, wet | | 136 | | Strg | | PVC Riser Filter Sand |
| 8 | S-8 | 14-16 | 24 | 12 | 3 3 3 3 | S-8 : Loose, black (10YR, 2/1) fine to medium SAND, some Silt, trace Gravel, strong oil-like odor, oil-like staining, slight sheen, wet | | 426 | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - 2" of crushed stone present at the surface.

4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-314D**

TEST BORING LOG



**National Grid
642 Allens Avenue
Providence, Rhode Island**

**EXPLORATION NO.: GZ-314D
SHEET: 2 of 3
PROJECT NO: 33554
REVIEWED BY: MSK**

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 15 | 3 2 3 3 | S-9 : 0-7" Black (10YR, 2/1) fine to medium SAND, some Silt, trace Gravel, strong oil-like odor, oil-like staining, slight sheen, wet 7"-15" Black (10YR, 2/1) fine SAND and SILT, some Gravel, oil-like coating, strong oil-like odor, wet | | 408 230 | Strg Strg | | | | |
| 17 | | | | | | | | | | | FILL | | |
| 18 | S-10 | 18-20 | 24 | 19 | 3 2 1 1 | S-10 : 0-3" Black (10YR, 2/1) fine SAND and SILT, some Gravel, oil-like coating, strong oil-like odor, wet 3"-7" Very dark brown (10YR, 3/1) fine to coarse SAND, some Gravel, little Silt, strong oil-like odor, oil-like coating, wet 7"-19" Very dark greenish gray (GLE Y 1, 4/5GY) SILTY CLAY, trace Shells, slight oil-like odor, wet | | 142 190 | Strg Strg | | | | |
| 19 | | | | | | | | 18 | | Sigt | 19 | -7.9 | |
| 20 | S-11 | 20-22 | 24 | 0 | WOH 1 1 | S-11 : Very soft cohesive soils, no recovery | | NM | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 3 2 3 2 | S-12 : Medium stiff, greenish gray (GLE Y 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | 5 | 24 | | Sigt | | | Bentonite Seal |
| 23 | | | | | | | | | | | | | Filter Sand |
| 24 | S-13 | 24-26 | 24 | 5 | WOH | S-13 : Very soft, greenish gray (GLE Y 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 19 | | Sigt | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 15 | WOH | S-14 : Very soft, greenish gray (GLE Y 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 10 | | Sigt | ORGANIC SILT | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 2 | WOH | S-15 : Very soft, greenish gray (GLE Y 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 2.5 | | Sigt | | | |
| 29 | | | | | | | | | | | | | |
| 30 | S-16 | 30-32 | 24 | 23 | WOH | S-16 : Very soft, very dark greenish gray (GLE Y 1, 3/10Y) ORGANIC SILT, trace Shells, trace Wood fibers, faint organic odor, wet | | 2.3 | | Sigt | | | |
| 31 | | | | | | | | | | | | | |
| 32 | S-17 | 32-34 | 24 | 17 | WOH | S-17 : Very soft, very dark greenish gray (GLE Y 1, 3/10Y) ORGANIC SILT, trace Shells, trace Wood fibers, faint organic odor, wet | | 1.4 | | Sigt | | | Well Screen |
| 33 | | | | | | | | | | | | | |

REMARKS

5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 34 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-24 feet bgs; Filter Sand placed in annulus from 22-34 feet bgs; Bentonite Seals installed from 22-23 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-314D**

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-314D
SHEET: 3 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---------------------------------------|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 34 | | | | | | End of exploration at 34 feet. | | | | | 34 | ORGANIC SILT | -22.9 | |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-314D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-314S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
 Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.13
Final Boring Depth (ft.): 19
Date Start - Finish: 5/27/2014 - 6/3/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|--------|-------|-------------|------------|
| 6/4/14 | 11:05 | 9.05 | 1 Day |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth (ft.) | Stratum Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|------------------------------------|---------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 0-19 | | | | | | : None/Refer to GZ-314D | 1 | | | | CRUSHED STONE | 19.9 | Stand Pipe |
| 1 | | | | | | | | | | | | | PVC Riser |
| 2 | | | | | | | | | | | | | Bentonite Seal |
| 3 | | | | | | | | | Mod | | | | Filter Sand |
| 4 | | | | | | | 2 | | | | | | |
| 5 | | | | | | | | | Mod | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | Sigt | | | |
| 8 | | | | | | | | | | | FILL | | |
| 9 | | | | | | | | | | Sigt | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | Well Screen |
| 13 | | | | | | | | | | Strg | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - No sampling completed at this location. See GZ-314D for sampling details. Stratum and impacts descriptions inferred from GZ-314D.
 2 - A groundwater monitoring well of the following construction was installed: 15 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 19 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-4 feet bgs; Filter Sand placed in annulus from 3-19 feet bgs; Bentonite Seals installed from 2-3 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-314S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:29 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-314S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---------------------------------------|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | | | | | | | | | Strg | | FILL | -7.9 | |
| 17 | | | | | | | | Strg | | | | | |
| 18 | | | | | | | | Strg | | | | | |
| 19 | | | | | | | | Strg | | | | | |
| 19 | | | | | | | | Sigt | | | | | |
| 20 | | | | | | End of exploration at 19 feet. | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-314S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-315D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.17
Final Boring Depth (ft.): 30
Date Start - Finish: 5/28/2014 - 6/4/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 6/4/14 | 11:30 | 8.99 | 2 Hrs |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth (ft.) Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|-------------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Gray brown (10YR, /2) fine to coarse SAND, little Gravel, little Silt, dry, slight oil-like odor | 1 2 3 | 41 | | | CRUSHED STONE | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine to medium SAND, little Silt, little Gravel, little (-) Ash, trace Slag, trace Brick, trace coal, slight oil-odor, moist, oil-like staining | | 38 | | Sigt | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine to medium SAND, little Silt, little Gravel, little (-) Ash, trace Slag, trace Brick, trace coal, slight oil-odor, moist, oil-like staining | | 37 | | Sigt | | |
| 4 | S-4 | 6-8 | 24 | 8 | 6 4 3 4 | S-4 : 0-5" Yellow brown (10YR, 5/6 fine SAND and SILT, trace gravel, slight oil-like odor, wet 5"-8" Black (10YR, 2/1) fine to coarse SAND, some Silt, slight oil-like odor, black oil-like staining, wet | 4 | 102 106 | | Sigt | FILL | |
| 5 | S-5 | 8-10 | 24 | 8 | 3 2 2 3 | S-5 : Loose green gray (GLE Y 1, 10Y) fine SAND, some Silt, moderate oil-like odor, slight sheen, wet, top 2" strong oil-like odor | | 186 | | Sigt | | |
| 6 | S-6 | 10-12 | 24 | 5 | 3 2 2 2 | S-6 : Loose, very dark green gray (GLE Y 1, 3/10Y) fine SAND, some Silt, slight sheen, strong oil-like odor, wet | | 188 | | Strg | | |
| 7 | S-7 | 12-14 | 24 | 11 | 2 1 2 2 | S-7 : Very loose, very dark green gray (GLE Y 1, 3/10Y) fine to medium SAND, some Gravel, some Silt, slight sheen, strong oil-like odor, wet | | 152 | | Strg | | |
| 8 | S-8 | 14-16 | 24 | 13 | 4 3 3 4 | S-8 : 0-7" Very dark green gray (GLE Y 1, 3/10Y) fine to medium SAND, some Gravel, some Silt, slight sheen, strong oil-like odor, wet, oil-like coating (4"-5") | | 90 114 | | | | PVC Riser |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - 2" Crushed stone present at the surface
 4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-315D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-315D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 7 | 2 3 4 7 | 7"-13" Black (10YR, 2/1) fine to coarse SAND, trace Shells, trace Gravel, oil-like coating, strong oil-like odor, wet | | | | Strg | | | |
| 17 | | | | | | S-9 : Loose, black (1-YR, 2/1) fine to coarse SAND, little Gravel, oil-like coated, strong oil-like odor, wet, from 4"-7" color changes to more yellow brown (10YR, 3/4) | | 6.6 | | Strg | FILL | | |
| 18 | S-10 | 18-20 | 24 | 17 | 2 2 1 1 | S-10 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 26 | | | 18 | -7.8 | |
| 19 | | | | | | | 5 | | | Sigt | | | Bentonite Seal |
| 20 | S-11 | 20-22 | 27 | 9 | WOH | S-11 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 20 | | | | | Filter Sand |
| 21 | | | | | | | | | | Sigt | | | |
| 22 | S-12 | 22-24 | 24 | 22 | WOH | S-12 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 1.5 | | | | | |
| 23 | | | | | | | | | | Sigt | | | |
| 24 | S-13 | 24-26 | 24 | 24 | WOH | S-13 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 0.9 | | | ORGANIC SILT | | |
| 25 | | | | | | | | | | Sigt | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 24 | WOH | S-14 : Very soft, very dark green gray (GLEY 1, 4/10Y) ORGANIC SILT, trace Shells, trace fine Sand, trace Wood, wet | | 1.6 | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | WOH | S-15 : Very soft, dark green gray, ORGANIC SILT, trace Shells, 1/8" seam of fine Sand at 18", wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -19.8 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS
 5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" diameter, schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19.5-30 feet bgs; Bentonite Seals installed from 18-19.5 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-315D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:30 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-316D
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.1
Final Boring Depth (ft.): 6.5
Date Start - Finish: 5/27/2014 - 6/2/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Elev.(ft.) | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|-------------|-----------------|--------|------|--------------------------------|---------------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Elev.(ft.) | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10YR, 4/4) fine to coarse SAND, some Gravel, little Silt, trace Brick, trace Slag, trace Coal, dry | 1 2 3 | 8.5 | | | 0.2 12.9 | CRUSHED STONE | No Equipment Installed |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine to medium SAND, little Ash, trace Gravel, trace Silt, trace Brick, trace Slag, trace Coal, dry | | 9.1 | | | | FILL | |
| 3 | | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Gray (10YR, 6/2) COBBLE, some Brick, some Gravel, little fine to coarse SAND, trace Silt, dry (Sample was not able to be collected) | | NM | | | | | |
| 5 | | | | | | | 4 | | | | | | |
| 6 | S-4 | 6-6.5 | 6 | 0 | 8->100 >100 | S-4 : Hit refusal on Concrete | 5 | NM | | | 6 6.5 | 7.1 CONCRETE 6.6 | |
| 7 | | | | | | End of exploration at 6.5 feet. | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - 3" Crushed stone present at the surface
 4 - Water table observed not observed.
 5 - Hit refusal at 6.5 feet bgs on concrete.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-316D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-317D
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
 Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.52
Final Boring Depth (ft.): 5.5
Date Start - Finish: 5/23/2014 - 6/5/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|--------------|-------------|---------------------|-------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Light brown (10YR, 5/6) fine to coarse SAND, some Silt, trace (+) Gravel, dry 6"-24" Dark brown (10YR, 3/2) fine SAND, some (-) Silt, trace (+) Gravel, moist/dry | 1 2 | ND 3.1 | | | | | | No Equipment Installed |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) fine SAND, some (-) Silt, trace (+) Gravel, moist/wet, pockets of oil-like staining, slight to moderate oil-like odor, wet | | 15.2 | | Mod | | FILL | | |
| 3 | | | | | | | | | | | | | | |
| 4 | S-3 | 4-5.5 | 18 | 8 | 8 10 >50 | S-3 : 0-4" Brown (10YR, 4/1) fine SAND and SILT, wet, strong oil-like odor 4"-8" Black (10YR, 2/1) fine to medium SAND, some Silt, some Ash, oil-like coating, strong oil-like odor, wet | 3 4 | 182 487 | | Strg Strg | | | | |
| 5 | | | | | | | | | | | 5.5 | 6.0 | | |
| 6 | | | | | | End of exploration at 5.5 feet. | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |

REMARKS

1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 4 feet bgs.
 4 - Hit refusal at 5.5 feet bgs on unknown object.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-317D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-318D
SHEET: 1 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
 Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.13
Final Boring Depth (ft.): 34
Date Start - Finish: 5/23/2014 - 6/2/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/10/14 | 12:00 | 7.48 | 8 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|-------------|-------------------|--------|------|-----------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Light brown (10YR, 5/6) fine to medium SAND, little Silt, little Gravel, dry 6"-12" Brown (10YR, 4/4) fine to coarse SAND, some Gravel, little Silt, dry 12"-24" brown (10YR, 4/4) fine to coarse SAND, some Gravel, trace Silt, trace Brick, some Coal, slight oil-like odor, moist/dry | 1 2 3 | ND ND 7.1 | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Brown (10YR, 4/4) fine to coarse SAND, some Gravel, trace Silt, trace Brick, trace Coal, slight oil-like odor, moist | | 30.5 | | Sigt | | |
| 3 | | | | | | | | | | Sigt | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Brown (10YR, 4/4) fine to coarse SAND, some Silt, little Gravel, trace Brick, trace Coal, slight oil-like odor, moist | | 19.5 | | Sigt | | |
| 5 | | | | | | | | | | Sigt | | |
| 6 | S-4 | 6-8 | 24 | 12 | 7 5 6 6 | S-4 : Medium dense, dark greenish gray (GLEY 1, 4/56Y) fine SAND, some Gravel, little Silt, strong oil-like odor, wet | 4 | 186 | | Strg | | |
| 7 | | | | | | | | | | Strg | FILL | |
| 8 | S-5 | 8-10 | 24 | 7 | 5 4 3 3 | S-5 : Loose, dark greenish gray (GLEY 1, 4/56Y) fine SAND, some Gravel, (0-1" Silt lense) strong oil-like odor, wet | | 210 | | Strg | | |
| 9 | | | | | | | | | | Strg | | |
| 10 | S-6 | 10-12 | 24 | 1 | 3 3 3 1 | S-6 : Loose, dark gray (GLEY 1, 4/N) fine to medium SAND, some Gravel, trace Silt, strong oil-like odor, wet | | 185 | | Strg | | |
| 11 | | | | | | | | | | Strg | | PVC Riser |
| 12 | S-7 | 12-14 | 24 | 14 | 3 3 4 5 | S-7 : 0-9" Dark gray (GLEY 1, 4/N) fine to medium SAND, little Silt, strong oil-like odor, wet 9"-11" Dark gray (GLEY 1, 4/N) fine to coarse SAND and GRAVEL, trace Silt, strong oil-like odor, wet 11"-14" Dark gray (GLEY 1, 4/N) fine to medium SAND, little Silt, strong oil-like odor, wet | | 118 344 221 | | Strg | | |
| 13 | | | | | | | | | | Strg | | |
| 14 | S-8 | 14-16 | 24 | 1 | 5 1 4 3 | S-8 : Loose, dark gray (GLEY 1, 4/N) fine to coarse SAND, some Gravel, trace Silt, moderate oil-like odor, wet | | 76 | | | | |
| 15 | | | | | | | | | | | | |

REMARKS

- 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
- 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
- 3 - Poly sheeting observed at 6" and 12" bgs.
- 4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-318D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-318D
SHEET: 2 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 9 | 3 2 2 2 | S-9 : 0-5" Black (10YR, 2/1) fine to coarse SAND, some Gravel, some Silt, moderate oil-like odor, wet | | 51 60 | | Mod | | | |
| 17 | | | | | | 5"-9" Black (10YR, 2/1) fine SAND and SILT, little Gravel, moderate oil-like odor, wet | | | | Mod | FILL | | |
| 18 | S-10 | 18-20 | 24 | 0 | WOH 1 1 1 | S-10 : Very loose, no recovery | | NM | | | | | |
| 19 | | | | | | | 5 | | | | | | |
| 20 | S-11 | 20-22 | 24 | 6 | WOH 1 1 1 | S-11 : Very soft, dark gray (GLEY 1, 4/N) ORGANIC SILT, trace Gravel, trace Shells, slight Organic odor, wet | | 14 | | | 20 | -8.9 | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 18 | 11 3 4 3 | S-12 : Medium stiff, dark gray (GLEY 1, 4/N) ORGANIC SILT, trace gravel, trace fibers, (15"-16" Band of Gravel) slight Organic odor, wet | | 28 | | | | | ← Bentonite Seal |
| 23 | | | | | | | | | | | | | ← Filter Sand |
| 24 | S-13 | 24-26 | 24 | 19 | WOH 1 WOH 2 | S-13 : Very soft, dark gray (GLEY 1, 4/N) ORGANIC SILT, slight Organic odor, wet | | 9 | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 19 | 2 3 3 2 | S-14 : Medium stiff, very dark gray (GLEY 1, 4/N) ORGANIC SILT, trace fibers, slight Organic odor, wet | | 2 | | | ORGANIC SILT | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | WOH 2 1 3 | S-15 : Soft, very dark gray (GLEY 1, 4/N) ORGANIC SILT, trace fibers, slight Organic odor, wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | S-16 | 30-32 | 24 | 6 | WOH 2 5 9 | S-16 : Medium stiff, very dark gray (GLEY 1, 4/N) ORGANIC SILT, little Gravel, slight Organic odor, wet | | 0.5 | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | S-17 | 32-34 | 24 | 19 | 6 2 6 8 | S-17 : Medium stiff, very dark gray (GLEY 1, 4/N) ORGANIC SILT, little Gravel, trace Shells, slight Organic odor, wet | | ND | | | | | Well Screen |
| 33 | | | | | | | | | | | | | |

REMARKS

5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 34 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-24 feet bgs; Filter Sand placed in annulus from 24-34 feet bgs; Bentonite Seals installed from 21-22 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-318D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-318D
SHEET: 3 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---------------------------------------|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 34 | | | | | | End of exploration at 34 feet. | | | | | 34 | ORGANIC SILT | -22.9 | |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-318D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-319D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.20
Final Boring Depth (ft.): 30
Date Start - Finish: 5/27/2014 - 6/2/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|--------|-------|-------------|------------|
| 6/4/14 | 11:40 | 7.38 | 2 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|-------------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Dark brown (10YR, 4/4) fine to medium SAND, little Gravel, trace Gravel, dry | 1 2 3 | 8.1 | | | CRUSHED STONE | 13.0 | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) fine to medium SAND, little Silt, trace Gravel, trace Slag, trace Ash, trace Brick, trace Coal, moist, slight oil-like odor | | 6.8 | | Sigt | | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Dark brown (10YR, 3/2) fine to medium SAND, little Silt, trace Gravel, trace Slag, trace Ash, trace Brick, trace Coal, moist, slight oil-like odor | | 7.4 | | Sigt | | | |
| 4 | S-4 | 6-8 | 24 | 10 | 9 6 8 7 | S-4 : Medium dense, dark brown (10YR, 3/1), fine to coarse SAND, some Gravel, trace Silt, trace Slag, trace Ash, trace Coal, trace Brick, slight oil-like odor, bands of blue staining, wet | 4 | 18.8 | | Sigt | | | |
| 5 | S-5 | 8-10 | 24 | 12 | 7 6 19 28 | S-5 : Medium dense, dark brown (10YR, 3/1), fine to coarse SAND, some Gravel, trace Silt, trace Slag, trace Ash, trace Coal, trace Brick, slight oil-like odor, bands of blue staining, wet | | 17.8 | | Sigt | FILL | | |
| 6 | S-6 | 10-12 | 24 | 14 | 16 19 19 23 | S-6 : Dense, gray brown (10YR, 5/2) fine to coarse SAND, little (+) Gravel, trace (-) Silt, trace Coal, trace Wood chips, blue staining, slight oil-like odor, wet | | 1.8 | | Sigt | | | PVC Riser |
| 7 | S-7 | 12-14 | 24 | 12 | 21 23 19 23 | S-7 : Dense, gray (10YR, 4/1) fine to coarse SAND, some Silt, little Gravel, slight oil-like odor, wet | | 4.8 | | Sigt | | | |
| 8 | S-8 | 14-16 | 24 | 10 | 14 10 11 16 | S-8 : Medium dense, brown (10YR, 5/1) fine to medium SAND, some Silt, little Gravel, wet | | ND | | | | | |

REMARKS
 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - 2" Crushed stone present at the surface.
 4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-319D**

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-319D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed | |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|----------------------|--|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 14 | 20 19 16 18 | S-9 : Dense, gray (10YR, 5/1) fine to coarse SAND, little Gravel, little Silt, trace Wood chips, slight blue staining, wet | | | | | | | ← Bentonite Seal | |
| 17 | | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 16 | 21 30 17 19 | S-10 : Dense, gray (10YR, 5/1) fine to medium Sand, little Silt, trace Gravel, wet | | | | | FILL | | ← Filter Sand | |
| 19 | | | | | | | 5 | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 18 | 10 9 12 13 | S-11 : 0-5" Dark gray (10YR, 4/1) fine to coarse SAND, some Gravel, little Silt, slight blue staining, wet | | | | | | | ← Well Screen | |
| 21 | | | | | | 5"-18" Gray (10YR, 4/1) fine to medium SAND, little Silt, some Gravel, wet | | | | | 21 | -7.8 | | |
| 22 | S-12 | 22-24 | 24 | 18 | 20 19 20 14 | S-12 : Dense, gray (20YR, 5/1) fine to coarse SAND, some Silt, little Gravel, wet | | | | | | | ← Well Screen | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 18 | 14 9 12 14 | S-13 : Medium dense, gray (10YR, 5/1) fine SAND, some Silt, trace Gravel, wet | | | | | SAND AND SILT | | ← Well Screen | |
| 25 | | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 12 | 13 8 19 15 | S-14 : 0-8" Gray (10YR, 5/1) fine SAND, some Silt, trace Gravel, wet | | | | | | | ← Well Screen | |
| 27 | | | | | | 8"-12" Gray brown (10YR, 5/2) medium to course SAND, little Gravel, trace Silt, trace Organics, wet | | | | | 26 | -12.8 | | |
| 28 | S-15 | 28-30 | 24 | 12 | 12 11 12 16 | S-15 : Medium dense, gray brown (10YR, 5/2) fine to coarse SAND, little Gravel, trace Silt, wet | | | | | SAND | | ← Well Screen | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | | 30 | -16.8 | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 18-30 feet bgs; Bentonite Seals installed from 16-18 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-319D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-320D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 16.03
Final Boring Depth (ft.): 30
Date Start - Finish: 5/28/2014 - 6/5/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 6/11/14 | 9:10 | 8.99 | 6 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------|-----------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Gray brown (10YR, 4/2) fine to coarse SAND, little Gravel, little Silt, trace Brick, trace Slag, dry | 1 2 | ND | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/2) fine to medium SAND, little Gravel, little Slag, trace Silt, trace Ash, trace clinker, trace Brick, moist | | ND | | | | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/2) fine to medium SAND, little Gravel, little Slag, trace Silt, trace Ash, trace clinker, trace Brick, moist | | ND | | | | | |
| 4 | S-4 | 6-8 | 24 | 12 | 8 5 5 7 | S-4 : Loose, gray brown (10YR, 5/2) fine SAND, some Silt, trace Gravel, wet | | ND | | | | | |
| 5 | S-5 | 8-10 | 24 | 8 | 8 6 9 7 | S-5 : 0-3" Brown (10YR, 5/3) fine SAND and SILT, little Gravel, wet 3"-8" Gray (GLE Y 1, 5/N) fine to medium SAND, some Silt, some Gravel, wet | | ND | | | | | |
| 6 | S-6 | 10-12 | 24 | 0 | 18 19 10 8 | S-6 : No Recovery | | NM | | | | | PVC Riser |
| 7 | S-7 | 12-14 | 24 | 0 | 8 12 13 13 | S-7 : No recovery, sheen on spoon | | NM | | | | | |
| 8 | S-8 | 14-16 | 24 | 7 | 12 6 2 3 | S-8 : Loose, black (10YR, 2/1) fine to coarse SAND and GRAVEL, trace Brick, trace Silt, sheen, moderate oil-like odor, wet | | 195 | | | | | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 7 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-320D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:35 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-320D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---------------------|-------------|----------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 13 | 3 6 7 3 | S-9 : Medium dense, black (10YR, 2/1) fine to coarse SAND, some Slag, little Gravel, trace Brick, slight oil-like odor, wet | | 20 | | Mod | FILL | | |
| 17 | | | | | | | | | | Sigt | | | |
| 18 | S-10 | 18-20 | 24 | 8 | 5 2 2 3 | S-10 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, some Organics, slight oil-like odor, wet | | 4.1 | | Sigt | 18 | -2.0 | ← Bentonite Seal |
| 19 | | | | | | | 4 | | | Sigt | | | |
| 20 | S-11 | 20-22 | 24 | 21 | 1 1 2 2 | S-11 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Roots, trace Organics, wet | | 2.5 | | | ORGANIC SILT | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 24 | WOH 5 6 | S-12 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Gravel, trace Organic, wet | | 1.8 | | | SAND AND SILT | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 19 | 3 6 8 14 | S-13 : Medium Stiff, brown (10YR, 5/3) fine SAND and SILT, wet | | ND | | | 24 | -8.0 | ← Well Screen |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 12 | 3 9 16 15 | S-14 : 0-6" Brown (10YR, 5/3) fine SAND and SILT, wet 6"-12" Gray (10YR, 5/1) SILT and fine SAND, wet | | ND | | | SAND AND SILT | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 16 | 8 11 12 19 | S-15 : Medium Stiff, gray (10YR, 5/1) SILT and fine SAND, wet | | ND | | | SAND AND SILT | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -14.0 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 34 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 18-19 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-320D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-321
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Ditch Witch
Rig Model: N/A
Drilling Method:
Soil Vactor

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.9
Final Boring Depth (ft.): 4
Date Start - Finish: 5/20/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D. (in): N/A

Sampler Type: N/A
Sampler O.D. (in.): N/A
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown gray (10YR, 6/2) fine SAND, some Silt, trace Gravel, dry | 1 2 | ND | | | | | | No Equipment Installed |
| 2 | | | | | | | | | | | | | | |
| 3 | S-2 | 2-4 | N/A | N/A | | S-2 : Brown (10YR, 4/4) fine to Medium SAND, trace Gravel, trace Silt, moist | 3 | ND | | | | FILL | | |
| 4 | | | | | | | | | | | 4 | 6.9 | | |
| 5 | | | | | | End of exploration at 4 feet. | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |

REMARKS
 1 - This boring was completed with an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-321

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:36 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-322
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Ditch Witch
Rig Model: N/A
Drilling Method:
Soil Vactor

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.9
Final Boring Depth (ft.): 3.5
Date Start - Finish: 5/20/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D. (in): N/A

Sampler Type: N/A
Sampler O.D. (in.): N/A
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Groundwater Depth (ft.) | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------------------|-------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Elev. (ft.) | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10YR, 4/3) fine SAND, some Silt, little Gravel, dry | 1 2 | 0.8 | | | | | No Equipment Installed |
| 2 | | | | | | | | | | | FILL | | |
| 3 | S-2 | 2-3.5 | N/A | N/A | | S-2 : Dark green gray (GLEYS 1. 4/1) fine SAND and SILT, trace Gravel | 3 | 0.6 | | | | | |
| 4 | | | | | | End of exploration at 3.5 feet. | | | | | 3.5 | 7.4 | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
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| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - This boring was completed with an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 3.5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-322

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-323
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Ditch Witch
Rig Model: N/A
Drilling Method:
 Soil Vactor

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.9
Final Boring Depth (ft.): 5
Date Start - Finish: 5/20/2014 - 5/20/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D. (in): N/A

Sampler Type: N/A
Sampler O.D. (in.): N/A
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10R, 4/3) fine SAND, some Silt, trace Gravel, moist | 1 2 | ND | | | | | | No Equipment Installed |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Brown (10YR, 4/3) fine SAND, some Silt, some Gravel, moist | | ND | | | | FILL | | |
| 3 | S-3 | 4-5 | N/A | N/A | | S-3 : Brown (10YR, 4/3) fine to medium SAND, some Gravel, little Silt, moist | 3 | ND | | | 5 | 6.9 | | |
| 4 | | | | | | End of exploration at 5 feet. | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
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| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |

REMARKS
 1 - This boring was completed with an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - s
 3 - Water table observed at 5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-323

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:37 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-324
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Ditch Witch
Rig Model: N/A
Drilling Method:
Soil Vactor

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.2
Final Boring Depth (ft.): 5
Date Start - Finish: 5/20/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D. (in): N/A

Sampler Type: N/A
Sampler O.D. (in.): N/A
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|---|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Yellow brown (10YR, 6/4) fine to medium SAND, some Gravel, trace Silt, dry | 1 2 | 3.4 | | | FILL | No Equipment Installed |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Blue/black (GLE Y 2, 2.5/B) fine SAND, little wood chips, purifier waste-like odor | 33.5 | | Mod | | | |
| 3 | S-3 | 4-5 | N/A | N/A | | S-3 : Blue/black (GLE Y 2, 2.5/B) fine SAND, little wood chips, purifier waste-like odor | 26.4 | | Mod | | | |
| 4 | | | | | | | 3 | | | | 5 | 6.2 |
| 5 | | | | | | End of exploration at 5 feet. | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
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| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |

REMARKS

1 - This boring was completed with an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-324

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: RCA 12R
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
 Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 17.87
Final Boring Depth (ft.): 15
Date Start - Finish: 5/22/2014 - 5/30/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/3/11 | NM | 10.02 | 4 Days |
| 6/11/14 | 12:20 | 9.93 | 12 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 0-15 | | | | | | : None/Refer to GZ-301D | | | | | | | | |
| 1 | | | | | | | 1 | | | | | | | ← Road Box |
| 2 | | | | | | | 2 | | | | | | | ← PVC Riser |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | ← Bentonite Seal |
| 5 | | | | | | | | | | | | | | ← Filter Sand |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
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| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |

REMARKS

1 - No sampling completed at this location. See GZ-301D for sampling details. Stratum and impacts descriptions inferred from GZ-301D.
 2 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs. Filter Sand placed in annulus from 4-15 feet bgs. Bentonite seals installed from 3-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted road box.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
RCA 12R

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: VHB-8R
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 12.6
Final Boring Depth (ft.): 16
Date Start - Finish: 5/28/2014 - 6/4/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 6/4/14 | 14:25 | 5.15 | 30 Mins |
| 6/11/14 | 9:50 | 4.54 | 7 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Groundwater Depth (ft.) | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------------------|-------------|--|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Elev. (ft.) | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Light brown (10YR, 4/4) fine to medium SAND< some Silt, little Gravel, trace Roots, dry | 1 2 | ND | | | | | Road Box Bentonite Seal PVC Riser Filter Sand |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Light brown (10YR, 4/4) fine to Medium SAND, some Silt, little Gravel, trace (-) Roots, dry | | ND | | | | | |
| 3 | | | | | | | 3 | | | | FILL | | |
| 4 | S-3 | 4-6 | 24 | 10 | 5 4 4 6 | S-3 : Loose, light brown (10YR, 4/4) fine SAND, little Silt, trace Gravel, dry | | 0.4 | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 12 | 3 1 3 2 | S-4 : 0-6" Loose, light brown (10YR, 4/4) fine SAND, little Silt, trace Gravel, dry 6"-12" Loose, dark brown (10YR, 3/3) fine SAND, some Silt, wet | | 2.4 | | | 6 6.6 | | |
| 7 | | | | | | | | | | | | | Well Screen |
| 8 | S-5 | 8-10 | 24 | 11 | 1 2 5 5 | S-5 : Loose, brown (10YR, 4/3) fine to medium SAND, little Silt, trace Gravel, wet | | 0.4 | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 11 | 4 4 4 6 | S-6 : Loose, light brown (10YR, 4/4) fine to medium SAND, little Silt, trace Gravel, wet | | 0.4 | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 12 | 6 11 11 12 | S-7 : Medium dense, light brown (10YR, 4/4) fine to medium SAND, little Silt, wet | | 0.2 | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 14 | 6 5 6 6 | S-8 : Medium dense, light brown (10YR, 4/4) fine to medium SAND, little Silt, wet | | 0.3 | | | | | Filter Sand |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 4.5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
VHB-8R

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: VHB-8R
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---------------------------------------|--------|-----------------|--------|------|--------------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | | | | | | | | | | | Possible FILL/SAND | | | ← Filter Sand |
| 16 | | | | | | End of exploration at 16 feet. | 4 | | | | 16 | -3.4 | | |
| 17 | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 12 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-2 feet bgs. Filter Sand placed in annulus from 1.5-16 feet bgs. Bentonite seals installed from 0.5-1.25 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted road box.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
VHB-8R

TEST PIT FIELD LOG

| | | |
|---|---|--|
| GZA GEOENVIRONMENTAL, INC. 530 BROADWAY, PROVIDENCE, RI GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS | PROJECT CLIENT: National Grid LOCATION: 642 Allens Avenue Providence, Rhode Island | TEST PIT NO.: TP-301 FILE NO.: 33554 DATE: 6/17/14 |
|---|---|--|

| | | | |
|---------------------------------|---------------------------|----------------|-----------------|
| EXCAVATION EQUIPMENT | | | |
| GZA ENGINEER: Sophia Narkiewicz | CONTRACTOR: Clean Harbors | DATUM: | N/A |
| WEATHER: Sunny 70s | OPERATOR: Victor Delgado | GROUND ELEV.: | NM |
| | MAKE: CAT | TIME STARTED: | 0800 |
| | CAPACITY: ICY | MODEL: 430E | TIME COMPLETED: |
| | | REACH: 15 feet | 1600 |

| DEPTH | PPM | EXCAV. EFFORT | BOULDER COUNT QTY. CLASS | REMARK NO. |
|---------------|-----|---------------|--------------------------|------------|
| 0.0.5' | 0 | | | |
| -1- 0.5'-1' | 0 | E | -- | |
| -2- 1.5'-5.5' | 0 | E | -- | 1 |
| -3- | | E | -- | |
| -4- | | | | |
| -5- | | | | |
| -6- 5.5'-13' | 195 | E | -- | 2 3 |
| -7- | | | | |
| -8- | | | | |
| -9- | | | | |
| -10- | | | | |
| -11- | ▽ | | | |
| -12- | | | | |
| -13- 13' + | NM | E | -- | 4 5 |
| -14- | | | | 6 |

REMARKS:

- 1 Poly layer observed at 1.5 feet bgs and 5.5 feet bgs
- 2 Pile/wood observed at 7 feet bgs and 10 feet bgs.
- 3 PID reading around hole around 6 ppm.
- 4 Water observed at 11 feet bgs.
- 5 LNAPL seeping in from the south at the water table.
- 6 Recovery well (12" diameter) set at 13.25 feet bgs-screened from 8 to 13 feet bgs.

N/A=Not Applicable
NM=Not Measured

| | | | |
|------------------------|--|--|---|
| TEST PIT PLAN | LEGEND: BOULDER COUNT SIZE RANGE LETTER CLASSIFICATION DESIGNATION 6"-18" A 18"-36" B 36" OR LARGER C | PROPORTIONS USED TRACE (TR) 0-10% LITTLE (LI) 10-20% SOME (SO) 20-35% AND 35-50% | EXCAVATION EFFORT E EASY M MODERATE D DIFFICULT |
| NORTH VOLUME= 50 CY | OBSERVED GROUNDWATER LEVEL | | |

LOG KEY



GZA
Geo Environmental, Inc.
 Engineers and Scientists

MODIFIED BURMEISTER SOIL CLASSIFICATION

| COMPONENT | NAME | PROPORTIONAL TERM | PERCENT BY WEIGHT | Identification of Fines | | |
|-----------|----------------------|-------------------|-------------------|-------------------------|-------|---------------------------|
| | | | | Material | PI | Atterberg Thread Diameter |
| MAJOR | GRAVEL, SAND, FINES* | | >50 | SILT | 0 | Cannot Roll |
| Minor | Gravel, Sand, Fines* | and | 35-50 | Clayey SILT | 1-5 | 1/4" |
| | | some | 20-35 | SILT & CLAY | 5-10 | 1/8" |
| | | little | 10-20 | CLAY & SILT | 10-20 | 1/16" |
| | | trace | 0-10 | Silty CLAY | 20-40 | 1/32" |
| | | | | CLAY | >40 | 1/64" |

| GRADATION DESIGNATION | PROPORTION OF COMPONENT | PLASTIC SOILS | | GRAVEL AND SAND | |
|-----------------------|-------------------------|---------------|----------------------|-----------------|----------------------|
| | | Consistency | Blow/Ft. SPT N-Value | Density | Blow/Ft. SPT N-Value |
| Fine to coarse | All fractions > 10% | Very Soft | <2 | Very Loose | <4 |
| Medium to coarse | <10% fine | Soft | 2 – 4 | Loose | 4 – 10 |
| Fine to medium | <10% coarse | Medium Stiff | 4 – 8 | Medium Dense | 10 – 30 |
| Coarse | <10% fine and medium | Stiff | 8 – 15 | Dense | 30 – 50 |
| Medium | <10% coarse and fine | Very Stiff | 15 – 30 | Very Dense | >50 |
| Fine | <10% coarse and medium | Hard | >30 | | |

ORGANIC SOIL CLASSIFICATION

Fibrous PEAT (Pt) - Lightweight, spongy, mostly visible organic matter, water squeezes readily from sample. Typically near top of deposit.
 Fine Grained PEAT (Pt) - Lightweight, spongy, little visible organic matter, water squeezes readily from sample. Typically below fibrous peat.
 Organic Silt (OL) - Typically gray to dark gray, often has strong H₂S odor. Typically contains shells or shell fragments. Lightweight. Usually found near coastal regions. May contain wide range of sand fractions.
 Organic Clay (OH) - Typically gray to dark gray, high plasticity. Usually found near coastal regions. May contain wide range of sand fractions. Need organic content test for final identification

SOIL/WASTE CHARACTERIZATION PROTOCOL FOR FORMER MGP SITES

| KEY TO VISUAL IMPACTS | | | KEY TO ODOR DESCRIPTIONS | | |
|---------------------------------|---|--------------------------------|--|----------------|---------------|
| Petroleum – Like Impacts | | Coal Tar – Like Impacts | Sigt = Slight | Mod = Moderate | Strg = Strong |
| | Sheen Stained Coated Blebs Saturated Oil/Tar | | The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using and MiniRAE photoionization detector equipped with a 10.6 eV lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. | | |

ABBREVIATIONS

| | |
|---|--|
| MR = Mud Rotary HAS = Hollow Stem Auger SSA = Solid Stem Auger SS = Split Spoon Sampler U = Undisturbed Sample (Shelby Tube) Tv = Field Vane Shear Test (Torvane) PP = Pocket Penetrometer WOR = Weight of Rods WOH = Weight of Hammer SPT = Standard Penetration Test (ASTM D1586) N-Value = Cumulative number of uncorrected blows for the middle two six-inch intervals (blows/ft) = Measured Water Level USCS = Unified Soil Classification System (ASTM D2487) | REC = Recovery RQD = Rock Quality Designation PEN = Penetration length of sampler or core barrel PID = Photoionization Detector ppmv = Parts Per Million NA = Not Applicable NM = Not Measured NS = Not Surveyed ft. = Feet in = Inches bgs = below ground surface |
|---|--|

SURFACE SOIL DESCRIPTIONS AND FIELD SCREENING RESULTS TABLE

GZA Job No. 03.00033554.00

9/7/2017

642 Allens Avenue
Providence, Rhode Island

| Location # | Sample Depth (feet bgs) | Sample Description | Munsell Color | PID TVOC (ppmv) | Olfactory Indicators | Additional Visual Indicators |
|------------|-------------------------|---|---------------|-----------------|----------------------|------------------------------|
| SS-301 | 0 - 1 | Light brown, fine to coarse SAND, little gravel, trace silt, dry | 10 YR 5/6 | ND | none | none |
| SS-302 | 0 - 1 | Light brown, fine to coarse SAND and GRAVEL, trace silt, dry | 10 YR 5/6 | ND | none | none |
| SS-303 | 0 - 1 | Dark brown, fine to coarse SAND and GRAVEL, little ash, little slag, trace silt, trace brick, dry | 10 YR 3/2 | ND | none | none |
| SS-304 | 0 - 1 | Brown, fine to coarse SAND and GRAVEL, trace silt, trace metal, trace asphalt, trace roots, dry | 10 YR 4/4 | ND | none | none |
| SS-305 | 0 - 1 | Light brown, GRAVEL and fine to coarse SAND, trace silt, trace asphalt, trace roots, dry | 10 YR 5/6 | ND | none | none |
| SS-306 | 0 - 1 | Light brown fine to coarse SAND, little gravel, trace silt, trace coal, dry | 10 YR 5/6 | ND | none | none |
| SS-307 | 0 - 1 | Light brown, fine to medium SAND, little gravel, little silt, trace roots, dry | 10 YR 5/6 | ND | none | none |
| SS-308 | 0 - 1 | Brown, fine to coarse SAND and GRAVEL, trace silt, trace brick, trace ash, trace slag, trace asphalt, dry | 10 YR 4/4 | ND | none | none |
| SS-309 | 0 - 1 | Brown, fine to medium SAND, some gravel, trace silt, trace roots, dry | 10 YR 4/4 | ND | none | none |
| SS-310 | 0 - 1 | Brown, fine to coarse SAND and GRAVEL, trace silt, trace slag, trace ash, trace roots, dry | 10 YR 4/1 | ND | none | none |


Note:

Olfactory indicators to note petroleum or chemical odors


Additional visual indicators to note visual observations such as staining or solid waste content not noted under sample descriptions

SS-100 to SS-103 completed on 7/1/14

ND = Not Detected

 = Shading indicates that the well is located in the Natural Gas Regulator Station Area

 = Shading indicates that the well is located in the CNG Fueling Station Area

 = Shading indicates that the well is located in the LNG Facility Area



APPENDIX M

LABORATORY REPORT – SOIL SAMPLES



CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554.00 T-23)
ESS Laboratory Work Order Number: 1405485

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 2:52 pm, May 30, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

SAMPLE RECEIPT

The following samples were received on May 21, 2014 for the analyses specified on the enclosed Chain of Custody Record.

These samples were originally received on hold on May 19, 2014.

| <u>Lab Number</u> | <u>Sample Name</u> | <u>Matrix</u> | <u>Analysis</u> |
|-------------------|--------------------|---------------|---|
| 1405485-01 | GZ-307S S-3 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405485-02 | GZ-308S S-2 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405485-03 | GZ-309d S-3 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405485-04 | Trip Blank 51914 | Solid | 8260B |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

1405485-01 [Present in Method Blank \(B\).](#)
Chloroform
1405485-02 [Present in Method Blank \(B\).](#)
Chloroform
1405485-03 [Present in Method Blank \(B\).](#)
Chloroform
1405485-04 [Present in Method Blank \(B\).](#)
Chloroform

Total Metals Solid

CE42308-SRM1 [Standard Reference Material is biased low \(R-\).](#)
Silver (37% @ 70-130%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-307S S-3
Date Sampled: 05/19/14 10:05
Percent Solids: 86

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.7) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |
| Arsenic | 10.9 (2.4) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |
| Beryllium | 0.39 (0.10) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |
| Cadmium | ND (0.48) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |
| Chromium | 10.4 (0.9) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |
| Copper | 16.0 (2.4) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |
| Lead | 16.2 (4.7) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |
| Mercury | ND (0.034) | | 7471A | | 1 | KJK | 05/23/14 16:26 | 0.68 | 40 | CE42310 |
| Nickel | 13.6 (2.4) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |
| Selenium | ND (9.5) | | 6010B | | 2 | KJK | 05/29/14 13:34 | 2.47 | 100 | CE42308 |
| Silver | 0.49 (0.48) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |
| Thallium | ND (1.17) | | 7841 | | 5 | KJK | 05/29/14 2:13 | 2.47 | 100 | CE42308 |
| Zinc | 45.5 (2.4) | | 6010B | | 1 | JP | 05/28/14 9:00 | 2.47 | 100 | CE42308 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-307S S-3
Date Sampled: 05/19/14 10:05
Percent Solids: 86
Initial Volume: 17.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.117) | 0.0102 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,1,1-Trichloroethane | ND (0.0587) | 0.0103 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,1,2,2-Tetrachloroethane | ND (0.0587) | 0.0160 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,1,2-Trichloroethane | ND (0.0587) | 0.0147 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,1-Dichloroethane | ND (0.0587) | 0.0094 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,1-Dichloroethene | ND (0.0587) | 0.0144 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,1-Dichloropropene | ND (0.0587) | 0.0090 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,2,3-Trichlorobenzene | ND (0.0587) | 0.0196 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,2,3-Trichloropropane | ND (0.0587) | 0.0146 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,2,4-Trichlorobenzene | ND (0.0587) | 0.0129 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,2,4-Trimethylbenzene | J 0.0505 (0.0587) | 0.0113 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,2-Dibromo-3-Chloropropane | ND (0.352) | 0.117 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,2-Dibromoethane | ND (0.0587) | 0.0149 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,2-Dichlorobenzene | ND (0.0587) | 0.0083 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,2-Dichloroethane | ND (0.0587) | 0.0157 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,2-Dichloropropane | ND (0.0587) | 0.0154 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,3,5-Trimethylbenzene | ND (0.0587) | 0.0103 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,3-Dichlorobenzene | ND (0.0587) | 0.0074 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,3-Dichloropropane | ND (0.0587) | 0.0132 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,4-Dichlorobenzene | ND (0.0587) | 0.0156 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1,4-Dioxane - Screen | ND (5.87) | 1.96 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 1-Chlorohexane | ND (0.0587) | 0.0112 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 2,2-Dichloropropane | ND (0.117) | 0.0201 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 2-Butanone | ND (1.47) | 0.339 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 2-Chlorotoluene | ND (0.0587) | 0.0166 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 2-Hexanone | ND (0.587) | 0.101 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 4-Chlorotoluene | ND (0.0587) | 0.0076 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 4-Isopropyltoluene | J 0.0399 (0.0587) | 0.0105 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| 4-Methyl-2-Pentanone | ND (0.587) | 0.0707 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Acetone | ND (1.47) | 0.434 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Benzene | J 0.0117 (0.0587) | 0.0095 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Bromobenzene | ND (0.0587) | 0.0161 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-307S S-3
Date Sampled: 05/19/14 10:05
Percent Solids: 86
Initial Volume: 17.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0587) | 0.0190 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Bromodichloromethane | ND (0.0587) | 0.0081 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Bromoform | ND (0.0587) | 0.0169 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Bromomethane | ND (0.117) | 0.0392 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Carbon Disulfide | ND (0.0587) | 0.0087 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Carbon Tetrachloride | ND (0.0587) | 0.0102 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Chlorobenzene | ND (0.0587) | 0.0093 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Chloroethane | ND (0.117) | 0.0391 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Chloroform | B, J 0.0211 (0.0587) | 0.0121 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Chloromethane | ND (0.117) | 0.0149 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| cis-1,2-Dichloroethene | ND (0.0587) | 0.0146 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| cis-1,3-Dichloropropene | ND (0.0587) | 0.0133 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Dibromochloromethane | ND (0.0587) | 0.0148 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Dibromomethane | ND (0.0587) | 0.0186 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Dichlorodifluoromethane | ND (0.0587) | 0.0102 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Diethyl Ether | ND (0.0587) | 0.0149 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Di-isopropyl ether | ND (0.0587) | 0.0110 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Ethyl tertiary-butyl ether | ND (0.0587) | 0.0148 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Ethylbenzene | ND (0.0587) | 0.0076 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Hexachlorobutadiene | ND (0.0587) | 0.0196 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Isopropylbenzene | 1.26 (0.0587) | 0.0103 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Methyl tert-Butyl Ether | ND (0.0587) | 0.0094 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Methylene Chloride | ND (0.294) | 0.0154 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Naphthalene | 0.589 (0.0587) | 0.0154 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| n-Butylbenzene | 1.16 (0.0587) | 0.0144 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| n-Propylbenzene | 1.50 (0.0587) | 0.0143 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| sec-Butylbenzene | 1.85 (0.0587) | 0.0079 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Styrene | ND (0.0587) | 0.0077 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| tert-Butylbenzene | 0.160 (0.0587) | 0.0137 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Tertiary-amyl methyl ether | ND (0.0587) | 0.0085 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Tetrachloroethene | ND (0.0587) | 0.0196 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Tetrahydrofuran | ND (0.587) | 0.151 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-307S S-3
Date Sampled: 05/19/14 10:05
Percent Solids: 86
Initial Volume: 17.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.0716 (0.0587) | 0.0149 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| trans-1,2-Dichloroethene | ND (0.0587) | 0.0193 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| trans-1,3-Dichloropropene | ND (0.0587) | 0.0181 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Trichloroethene | ND (0.0587) | 0.0121 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Trichlorofluoromethane | ND (0.0587) | 0.0155 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Vinyl Acetate | ND (0.294) | 0.0121 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Vinyl Chloride | ND (0.0587) | 0.0194 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Xylene O | J 0.0387 (0.0587) | 0.0113 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Xylene P,M | J 0.0810 (0.117) | 0.0228 | 8260B | | 1 | 05/27/14 15:25 | CXE0362 | CE42730 |
| Xylenes (Total) | 0.120 (0.117) | | 8260B | | 1 | 05/27/14 15:25 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 87 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 103 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 90 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 99 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-307S S-3
Date Sampled: 05/19/14 10:05
Percent Solids: 86
Initial Volume: 19.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/21/14 17:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 7460 (44.0) | | 8100M | | 1 | 05/24/14 23:22 | CXE0356 | CE42107 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>125 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-307S S-3
Date Sampled: 05/19/14 10:05
Percent Solids: 86
Initial Volume: 14.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Acenaphthene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Acenaphthylene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Anthracene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Benzo(a)anthracene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Benzo(a)pyrene | ND (0.203) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Benzo(b)fluoranthene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Benzo(g,h,i)perylene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Benzo(k)fluoranthene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Chrysene | ND (0.203) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Dibenzo(a,h)Anthracene | ND (0.203) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Fluoranthene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Fluorene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Indeno(1,2,3-cd)Pyrene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Naphthalene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Phenanthrene | 0.538 (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |
| Pyrene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:07 | CXE0321 | CE42011 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 64 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 68 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 45 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 86 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-307S S-3
Date Sampled: 05/19/14 10:05
Percent Solids: 86

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-01
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.13) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-308S S-2
Date Sampled: 05/19/14 13:30
Percent Solids: 84

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (5.1) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Arsenic | 4.2 (2.5) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Beryllium | 0.22 (0.11) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Cadmium | ND (0.51) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Chromium | 4.1 (1.0) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Copper | 9.4 (2.5) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Lead | ND (5.1) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Mercury | 0.042 (0.036) | | 7471A | | 1 | KJK | 05/23/14 16:29 | 0.66 | 40 | CE42310 |
| Nickel | 7.2 (2.5) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Selenium | ND (5.1) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Silver | ND (0.51) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |
| Thallium | ND (1.26) | | 7841 | | 5 | KJK | 05/29/14 2:25 | 2.33 | 100 | CE42308 |
| Zinc | 92.1 (2.5) | | 6010B | | 1 | JP | 05/28/14 9:04 | 2.33 | 100 | CE42308 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-308S S-2
Date Sampled: 05/19/14 13:30
Percent Solids: 84
Initial Volume: 18.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.116) | 0.0101 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,1,1-Trichloroethane | ND (0.0579) | 0.0102 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,1,2,2-Tetrachloroethane | ND (0.0579) | 0.0158 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,1,2-Trichloroethane | ND (0.0579) | 0.0145 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,1-Dichloroethane | ND (0.0579) | 0.0093 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,1-Dichloroethene | ND (0.0579) | 0.0143 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,1-Dichloropropene | ND (0.0579) | 0.0089 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,2,3-Trichlorobenzene | ND (0.0579) | 0.0194 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,2,3-Trichloropropane | ND (0.0579) | 0.0144 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,2,4-Trichlorobenzene | ND (0.0579) | 0.0127 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,2,4-Trimethylbenzene | ND (0.0579) | 0.0111 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,2-Dibromo-3-Chloropropane | ND (0.348) | 0.116 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,2-Dibromoethane | ND (0.0579) | 0.0147 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,2-Dichlorobenzene | ND (0.0579) | 0.0082 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,2-Dichloroethane | ND (0.0579) | 0.0155 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,2-Dichloropropane | ND (0.0579) | 0.0152 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,3,5-Trimethylbenzene | ND (0.0579) | 0.0102 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,3-Dichlorobenzene | ND (0.0579) | 0.0073 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,3-Dichloropropane | ND (0.0579) | 0.0130 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,4-Dichlorobenzene | ND (0.0579) | 0.0154 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1,4-Dioxane - Screen | ND (5.79) | 1.94 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 1-Chlorohexane | ND (0.0579) | 0.0110 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 2,2-Dichloropropane | ND (0.116) | 0.0198 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 2-Butanone | ND (1.45) | 0.335 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 2-Chlorotoluene | ND (0.0579) | 0.0163 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 2-Hexanone | ND (0.579) | 0.0998 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 4-Chlorotoluene | ND (0.0579) | 0.0075 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 4-Isopropyltoluene | ND (0.0579) | 0.0103 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| 4-Methyl-2-Pentanone | ND (0.579) | 0.0698 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Acetone | ND (1.45) | 0.429 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Benzene | ND (0.0579) | 0.0094 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Bromobenzene | ND (0.0579) | 0.0159 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-308S S-2
Date Sampled: 05/19/14 13:30
Percent Solids: 84
Initial Volume: 18.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0579) | 0.0188 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Bromodichloromethane | ND (0.0579) | 0.0080 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Bromoform | ND (0.0579) | 0.0167 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Bromomethane | ND (0.116) | 0.0387 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Carbon Disulfide | ND (0.0579) | 0.0086 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Carbon Tetrachloride | ND (0.0579) | 0.0101 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Chlorobenzene | ND (0.0579) | 0.0092 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Chloroethane | ND (0.116) | 0.0386 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Chloroform | B, J 0.0209 (0.0579) | 0.0119 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Chloromethane | ND (0.116) | 0.0147 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| cis-1,2-Dichloroethene | ND (0.0579) | 0.0144 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| cis-1,3-Dichloropropene | ND (0.0579) | 0.0131 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Dibromochloromethane | ND (0.0579) | 0.0146 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Dibromomethane | ND (0.0579) | 0.0183 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Dichlorodifluoromethane | ND (0.0579) | 0.0101 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Diethyl Ether | ND (0.0579) | 0.0147 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Di-isopropyl ether | ND (0.0579) | 0.0109 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Ethyl tertiary-butyl ether | ND (0.0579) | 0.0146 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Ethylbenzene | ND (0.0579) | 0.0075 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Hexachlorobutadiene | ND (0.0579) | 0.0194 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Isopropylbenzene | ND (0.0579) | 0.0102 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Methyl tert-Butyl Ether | ND (0.0579) | 0.0093 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Methylene Chloride | ND (0.290) | 0.0152 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Naphthalene | J 0.0243 (0.0579) | 0.0152 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| n-Butylbenzene | ND (0.0579) | 0.0143 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| n-Propylbenzene | ND (0.0579) | 0.0141 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| sec-Butylbenzene | ND (0.0579) | 0.0078 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Styrene | ND (0.0579) | 0.0076 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| tert-Butylbenzene | ND (0.0579) | 0.0136 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Tertiary-amyl methyl ether | ND (0.0579) | 0.0083 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Tetrachloroethene | ND (0.0579) | 0.0194 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Tetrahydrofuran | ND (0.579) | 0.149 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-308S S-2
Date Sampled: 05/19/14 13:30
Percent Solids: 84
Initial Volume: 18.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0579) | 0.0147 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| trans-1,2-Dichloroethene | ND (0.0579) | 0.0190 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| trans-1,3-Dichloropropene | ND (0.0579) | 0.0178 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Trichloroethene | ND (0.0579) | 0.0119 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Trichlorofluoromethane | ND (0.0579) | 0.0153 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Vinyl Acetate | ND (0.290) | 0.0119 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Vinyl Chloride | ND (0.0579) | 0.0191 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Xylene O | ND (0.0579) | 0.0111 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Xylene P,M | ND (0.116) | 0.0225 | 8260B | | 1 | 05/23/14 22:48 | CXE0358 | CE42715 |
| Xylenes (Total) | ND (0.116) | | 8260B | | 1 | 05/23/14 22:48 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>93 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>94 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>95 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>96 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-308S S-2
Date Sampled: 05/19/14 13:30
Percent Solids: 84
Initial Volume: 19.3
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/21/14 17:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 48.6 (46.0) | | 8100M | | 1 | 05/25/14 0:01 | CXE0356 | CE42107 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>96 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-308S S-2
Date Sampled: 05/19/14 13:30
Percent Solids: 84
Initial Volume: 14.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Acenaphthene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Acenaphthylene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Anthracene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Benzo(a)anthracene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Benzo(a)pyrene | ND (0.203) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Benzo(b)fluoranthene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Benzo(g,h,i)perylene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Benzo(k)fluoranthene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Chrysene | ND (0.203) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Dibenzo(a,h)Anthracene | ND (0.203) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Fluoranthene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Fluorene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Indeno(1,2,3-cd)Pyrene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Naphthalene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Phenanthrene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |
| Pyrene | ND (0.405) | | 8270C | | 1 | 05/22/14 14:42 | CXE0321 | CE42011 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 87 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 100 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 77 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 123 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-308S S-2
Date Sampled: 05/19/14 13:30
Percent Solids: 84

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-02
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.17) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-309d S-3
Date Sampled: 05/19/14 11:35
Percent Solids: 89

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.7) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |
| Arsenic | 8.5 (2.3) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |
| Beryllium | 0.34 (0.10) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |
| Cadmium | ND (0.47) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |
| Chromium | 7.1 (0.9) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |
| Copper | 9.8 (2.3) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |
| Lead | ND (4.7) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |
| Mercury | ND (0.034) | | 7471A | | 1 | KJK | 05/23/14 16:32 | 0.65 | 40 | CE42310 |
| Nickel | 10.2 (2.3) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |
| Selenium | ND (9.3) | | 6010B | | 2 | KJK | 05/29/14 13:38 | 2.4 | 100 | CE42308 |
| Silver | ND (0.47) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |
| Thallium | ND (1.16) | | 7841 | | 5 | KJK | 05/29/14 2:42 | 2.4 | 100 | CE42308 |
| Zinc | 23.1 (2.3) | | 6010B | | 1 | JP | 05/28/14 9:08 | 2.4 | 100 | CE42308 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-309d S-3
Date Sampled: 05/19/14 11:35
Percent Solids: 89
Initial Volume: 20.5
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0941) | 0.0082 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,1,1-Trichloroethane | ND (0.0471) | 0.0083 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,1,2,2-Tetrachloroethane | ND (0.0471) | 0.0128 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,1,2-Trichloroethane | ND (0.0471) | 0.0118 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,1-Dichloroethane | ND (0.0471) | 0.0075 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,1-Dichloroethene | ND (0.0471) | 0.0116 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,1-Dichloropropene | ND (0.0471) | 0.0072 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,2,3-Trichlorobenzene | ND (0.0471) | 0.0157 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,2,3-Trichloropropane | ND (0.0471) | 0.0117 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,2,4-Trichlorobenzene | ND (0.0471) | 0.0104 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,2,4-Trimethylbenzene | ND (0.0471) | 0.0090 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,2-Dibromo-3-Chloropropane | ND (0.282) | 0.0941 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,2-Dibromoethane | ND (0.0471) | 0.0120 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,2-Dichlorobenzene | ND (0.0471) | 0.0067 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,2-Dichloroethane | ND (0.0471) | 0.0126 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,2-Dichloropropane | ND (0.0471) | 0.0123 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,3,5-Trimethylbenzene | ND (0.0471) | 0.0083 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,3-Dichlorobenzene | ND (0.0471) | 0.0059 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,3-Dichloropropane | ND (0.0471) | 0.0105 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,4-Dichlorobenzene | ND (0.0471) | 0.0125 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1,4-Dioxane - Screen | ND (4.71) | 1.57 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 1-Chlorohexane | ND (0.0471) | 0.0089 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 2,2-Dichloropropane | ND (0.0941) | 0.0161 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 2-Butanone | ND (1.18) | 0.272 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 2-Chlorotoluene | ND (0.0471) | 0.0133 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 2-Hexanone | ND (0.471) | 0.0810 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 4-Chlorotoluene | ND (0.0471) | 0.0061 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 4-Isopropyltoluene | ND (0.0471) | 0.0084 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| 4-Methyl-2-Pentanone | ND (0.471) | 0.0567 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Acetone | ND (1.18) | 0.348 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Benzene | ND (0.0471) | 0.0076 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Bromobenzene | ND (0.0471) | 0.0129 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-309d S-3
Date Sampled: 05/19/14 11:35
Percent Solids: 89
Initial Volume: 20.5
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0471) | 0.0152 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Bromodichloromethane | ND (0.0471) | 0.0065 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Bromoform | ND (0.0471) | 0.0136 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Bromomethane | ND (0.0941) | 0.0314 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Carbon Disulfide | ND (0.0471) | 0.0070 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Carbon Tetrachloride | ND (0.0471) | 0.0082 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Chlorobenzene | ND (0.0471) | 0.0074 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Chloroethane | ND (0.0941) | 0.0313 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Chloroform | B, J 0.0132 (0.0471) | 0.0097 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Chloromethane | ND (0.0941) | 0.0120 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| cis-1,2-Dichloroethene | ND (0.0471) | 0.0117 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| cis-1,3-Dichloropropene | ND (0.0471) | 0.0106 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Dibromochloromethane | ND (0.0471) | 0.0119 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Dibromomethane | ND (0.0471) | 0.0149 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Dichlorodifluoromethane | ND (0.0471) | 0.0082 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Diethyl Ether | ND (0.0471) | 0.0120 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Di-isopropyl ether | ND (0.0471) | 0.0088 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Ethyl tertiary-butyl ether | ND (0.0471) | 0.0119 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Ethylbenzene | ND (0.0471) | 0.0061 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Hexachlorobutadiene | ND (0.0471) | 0.0157 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Isopropylbenzene | ND (0.0471) | 0.0083 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Methyl tert-Butyl Ether | ND (0.0471) | 0.0075 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Methylene Chloride | ND (0.235) | 0.0123 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Naphthalene | ND (0.0471) | 0.0123 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| n-Butylbenzene | ND (0.0471) | 0.0116 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| n-Propylbenzene | ND (0.0471) | 0.0115 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| sec-Butylbenzene | ND (0.0471) | 0.0063 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Styrene | ND (0.0471) | 0.0062 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| tert-Butylbenzene | ND (0.0471) | 0.0110 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Tertiary-amyl methyl ether | ND (0.0471) | 0.0068 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Tetrachloroethene | ND (0.0471) | 0.0157 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Tetrahydrofuran | ND (0.471) | 0.121 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-309d S-3
Date Sampled: 05/19/14 11:35
Percent Solids: 89
Initial Volume: 20.5
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0471) | 0.0120 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| trans-1,2-Dichloroethene | ND (0.0471) | 0.0154 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| trans-1,3-Dichloropropene | ND (0.0471) | 0.0145 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Trichloroethene | ND (0.0471) | 0.0097 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Trichlorofluoromethane | ND (0.0471) | 0.0124 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Vinyl Acetate | ND (0.235) | 0.0097 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Vinyl Chloride | ND (0.0471) | 0.0155 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Xylene O | ND (0.0471) | 0.0090 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Xylene P,M | ND (0.0941) | 0.0183 | 8260B | | 1 | 05/23/14 23:16 | CXE0358 | CE42715 |
| Xylenes (Total) | ND (0.0941) | | 8260B | | 1 | 05/23/14 23:16 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>118 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>121 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>120 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>126 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-309d S-3
Date Sampled: 05/19/14 11:35
Percent Solids: 89
Initial Volume: 19.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/21/14 17:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | ND (42.3) | | 8100M | | 1 | 05/27/14 17:44 | CXE0364 | CE42107 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 74 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-309d S-3
 Date Sampled: 05/19/14 11:35
 Percent Solids: 89
 Initial Volume: 15.6
 Final Volume: 0.5
 Extraction Method: 3546

ESS Laboratory Work Order: 1405485
 ESS Laboratory Sample ID: 1405485-03
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: IBM
 Prepared: 5/21/14 17:19

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Acenaphthene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Acenaphthylene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Anthracene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Benzo(a)anthracene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Benzo(a)pyrene | ND (0.180) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Benzo(b)fluoranthene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Benzo(g,h,i)perylene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Benzo(k)fluoranthene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Chrysene | ND (0.180) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Dibenzo(a,h)Anthracene | ND (0.180) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Fluoranthene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Fluorene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Indeno(1,2,3-cd)Pyrene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Naphthalene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Phenanthrene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |
| Pyrene | ND (0.359) | | 8270C | | 1 | 05/22/14 15:17 | CXE0321 | CE42011 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 79 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 90 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 72 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 113 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-309d S-3
Date Sampled: 05/19/14 11:35
Percent Solids: 89

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-03
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.12) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank 51914
Date Sampled: 05/19/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-04
Sample Matrix: Solid
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.100) | 0.0087 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,1,1-Trichloroethane | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,1,2,2-Tetrachloroethane | ND (0.0500) | 0.0136 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,1,2-Trichloroethane | ND (0.0500) | 0.0125 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,1-Dichloroethane | ND (0.0500) | 0.0080 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,1-Dichloroethene | ND (0.0500) | 0.0123 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,1-Dichloropropene | ND (0.0500) | 0.0077 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,2,3-Trichlorobenzene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,2,3-Trichloropropane | ND (0.0500) | 0.0124 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,2,4-Trichlorobenzene | ND (0.0500) | 0.0110 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,2,4-Trimethylbenzene | ND (0.0500) | 0.0096 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,2-Dibromo-3-Chloropropane | ND (0.300) | 0.100 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,2-Dibromoethane | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,2-Dichlorobenzene | ND (0.0500) | 0.0071 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,2-Dichloroethane | ND (0.0500) | 0.0134 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,2-Dichloropropane | ND (0.0500) | 0.0131 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,3,5-Trimethylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,3-Dichlorobenzene | ND (0.0500) | 0.0063 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,3-Dichloropropane | ND (0.0500) | 0.0112 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,4-Dichlorobenzene | ND (0.0500) | 0.0133 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1,4-Dioxane - Screen | ND (5.00) | 1.67 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 1-Chlorohexane | ND (0.0500) | 0.0095 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 2,2-Dichloropropane | ND (0.100) | 0.0171 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 2-Butanone | ND (1.25) | 0.289 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 2-Chlorotoluene | ND (0.0500) | 0.0141 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 2-Hexanone | ND (0.500) | 0.0861 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 4-Chlorotoluene | ND (0.0500) | 0.0065 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 4-Isopropyltoluene | ND (0.0500) | 0.0089 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| 4-Methyl-2-Pentanone | ND (0.500) | 0.0602 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Acetone | ND (1.25) | 0.370 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Benzene | ND (0.0500) | 0.0081 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Bromobenzene | ND (0.0500) | 0.0137 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank 51914
Date Sampled: 05/19/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405485
ESS Laboratory Sample ID: 1405485-04
Sample Matrix: Solid
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0500) | 0.0162 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Bromodichloromethane | ND (0.0500) | 0.0069 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Bromoform | ND (0.0500) | 0.0144 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Bromomethane | ND (0.100) | 0.0334 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Carbon Disulfide | ND (0.0500) | 0.0074 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Carbon Tetrachloride | ND (0.0500) | 0.0087 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Chlorobenzene | ND (0.0500) | 0.0079 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Chloroethane | ND (0.100) | 0.0333 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Chloroform | B, J 0.0180 (0.0500) | 0.0103 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Chloromethane | ND (0.100) | 0.0127 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| cis-1,2-Dichloroethene | ND (0.0500) | 0.0124 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| cis-1,3-Dichloropropene | ND (0.0500) | 0.0113 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Dibromochloromethane | ND (0.0500) | 0.0126 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Dibromomethane | ND (0.0500) | 0.0158 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Dichlorodifluoromethane | ND (0.0500) | 0.0087 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Diethyl Ether | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Di-isopropyl ether | ND (0.0500) | 0.0094 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Ethyl tertiary-butyl ether | ND (0.0500) | 0.0126 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Ethylbenzene | ND (0.0500) | 0.0065 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Hexachlorobutadiene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Isopropylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Methyl tert-Butyl Ether | ND (0.0500) | 0.0080 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Methylene Chloride | ND (0.250) | 0.0131 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Naphthalene | ND (0.0500) | 0.0131 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| n-Butylbenzene | ND (0.0500) | 0.0123 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| n-Propylbenzene | ND (0.0500) | 0.0122 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| sec-Butylbenzene | ND (0.0500) | 0.0067 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Styrene | ND (0.0500) | 0.0066 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| tert-Butylbenzene | ND (0.0500) | 0.0117 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Tertiary-amyl methyl ether | ND (0.0500) | 0.0072 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Tetrachloroethene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Tetrahydrofuran | ND (0.500) | 0.129 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: Trip Blank 51914
 Date Sampled: 05/19/14 00:00
 Percent Solids: N/A
 Initial Volume: 15
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405485
 ESS Laboratory Sample ID: 1405485-04
 Sample Matrix: Solid
 Units: mg/kg wet
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| trans-1,2-Dichloroethene | ND (0.0500) | 0.0164 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| trans-1,3-Dichloropropene | ND (0.0500) | 0.0154 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Trichloroethene | ND (0.0500) | 0.0103 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Trichlorofluoromethane | ND (0.0500) | 0.0132 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Vinyl Acetate | ND (0.250) | 0.0103 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Vinyl Chloride | ND (0.0500) | 0.0165 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Xylene O | ND (0.0500) | 0.0096 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Xylene P,M | ND (0.100) | 0.0194 | 8260B | | 1 | 05/23/14 20:27 | CXE0358 | CE42715 |
| Xylenes (Total) | ND (0.100) | | 8260B | | 1 | 05/23/14 20:27 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>87 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>90 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>90 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>93 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42308 - 3050B

Blank

| | | | | | | | | | | |
|-----------|----|------|-----------|--|--|--|--|--|--|--|
| Antimony | ND | 5.0 | mg/kg wet | | | | | | | |
| Arsenic | ND | 2.5 | mg/kg wet | | | | | | | |
| Beryllium | ND | 0.10 | mg/kg wet | | | | | | | |
| Cadmium | ND | 0.50 | mg/kg wet | | | | | | | |
| Chromium | ND | 1.0 | mg/kg wet | | | | | | | |
| Copper | ND | 2.5 | mg/kg wet | | | | | | | |
| Lead | ND | 5.0 | mg/kg wet | | | | | | | |
| Nickel | ND | 2.5 | mg/kg wet | | | | | | | |
| Selenium | ND | 5.0 | mg/kg wet | | | | | | | |
| Silver | ND | 0.50 | mg/kg wet | | | | | | | |
| Thallium | ND | 0.25 | mg/kg wet | | | | | | | |
| Zinc | ND | 2.5 | mg/kg wet | | | | | | | |

LCS

| | | | | | | | | | | |
|-----------|------|------|-----------|-------|--|----|--------|--|--|--|
| Antimony | 107 | 15.4 | mg/kg wet | 116.0 | | 93 | 80-120 | | | |
| Arsenic | 114 | 7.7 | mg/kg wet | 122.0 | | 93 | 80-120 | | | |
| Beryllium | 47.3 | 0.32 | mg/kg wet | 54.30 | | 87 | 80-120 | | | |
| Cadmium | 75.3 | 1.55 | mg/kg wet | 88.00 | | 86 | 80-120 | | | |
| Chromium | 86.9 | 3.1 | mg/kg wet | 102.0 | | 85 | 80-120 | | | |
| Copper | 66.5 | 7.7 | mg/kg wet | 78.00 | | 85 | 80-120 | | | |
| Lead | 79.8 | 15.4 | mg/kg wet | 94.50 | | 84 | 80-120 | | | |
| Nickel | 51.3 | 7.7 | mg/kg wet | 56.30 | | 91 | 80-120 | | | |
| Selenium | 131 | 15.4 | mg/kg wet | 157.0 | | 83 | 80-120 | | | |
| Silver | 32.8 | 1.55 | mg/kg wet | 34.20 | | 96 | 80-120 | | | |
| Thallium | 115 | 38.1 | mg/kg wet | 116.0 | | 99 | 80-120 | | | |
| Zinc | 174 | 7.7 | mg/kg wet | 207.0 | | 84 | 80-120 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------|------|------|-----------|-------|--|----|--------|------|----|--|
| Antimony | 101 | 15.6 | mg/kg wet | 116.0 | | 87 | 80-120 | 6 | 20 | |
| Arsenic | 113 | 7.8 | mg/kg wet | 122.0 | | 92 | 80-120 | 1 | 20 | |
| Beryllium | 47.3 | 0.33 | mg/kg wet | 54.30 | | 87 | 80-120 | 0.03 | 20 | |
| Cadmium | 72.7 | 1.57 | mg/kg wet | 88.00 | | 83 | 80-120 | 3 | 20 | |
| Chromium | 86.0 | 3.1 | mg/kg wet | 102.0 | | 84 | 80-120 | 1 | 20 | |
| Copper | 67.0 | 7.8 | mg/kg wet | 78.00 | | 86 | 80-120 | 0.8 | 20 | |
| Lead | 85.5 | 15.6 | mg/kg wet | 94.50 | | 90 | 80-120 | 7 | 20 | |
| Nickel | 50.3 | 7.8 | mg/kg wet | 56.30 | | 89 | 80-120 | 2 | 20 | |
| Selenium | 128 | 15.6 | mg/kg wet | 157.0 | | 82 | 80-120 | 2 | 20 | |
| Silver | 31.2 | 1.57 | mg/kg wet | 34.20 | | 91 | 80-120 | 5 | 20 | |
| Thallium | 105 | 38.7 | mg/kg wet | 116.0 | | 90 | 80-120 | 9 | 20 | |
| Zinc | 172 | 7.8 | mg/kg wet | 207.0 | | 83 | 80-120 | 1 | 20 | |

Reference

| | | | | | | | | | | |
|----------|-----|------|-----------|-------|--|----|--------|--|--|--|
| Cadmium | 426 | 1.97 | mg/kg wet | 500.0 | | 85 | 70-130 | | | |
| Chromium | 453 | 3.9 | mg/kg wet | 500.0 | | 91 | 70-130 | | | |
| Copper | 444 | 9.8 | mg/kg wet | 500.0 | | 89 | 70-130 | | | |
| Lead | 452 | 19.6 | mg/kg wet | 500.0 | | 90 | 70-130 | | | |
| Nickel | 494 | 9.8 | mg/kg wet | 500.0 | | 99 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42308 - 3050B

| | | | | | | | | | | |
|--------|-----|------|-----------|-------|--|----|--------|--|--|----|
| Silver | 183 | 1.97 | mg/kg wet | 500.0 | | 37 | 70-130 | | | R- |
| Zinc | 468 | 9.8 | mg/kg wet | 500.0 | | 94 | 70-130 | | | |

Batch CE42310 - 7471A

Blank

| | | | | | | | | | | |
|---------|----|-------|-----------|--|--|--|--|--|--|--|
| Mercury | ND | 0.033 | mg/kg wet | | | | | | | |
|---------|----|-------|-----------|--|--|--|--|--|--|--|

LCS

| | | | | | | | | | | |
|---------|------|-------|-----------|-------|--|----|--------|--|--|--|
| Mercury | 3.93 | 0.786 | mg/kg wet | 3.980 | | 99 | 80-120 | | | |
|---------|------|-------|-----------|-------|--|----|--------|--|--|--|

LCS Dup

| | | | | | | | | | | |
|---------|------|-------|-----------|-------|--|----|--------|---|----|--|
| Mercury | 3.62 | 0.773 | mg/kg wet | 3.980 | | 91 | 80-120 | 8 | 20 | |
|---------|------|-------|-----------|-------|--|----|--------|---|----|--|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

Blank

| | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|----|--------|--|--|---|
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0170 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.37 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.37 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.41 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.42 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

LCS

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.58 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.84 | 0.0500 | mg/kg wet | 2.500 | | 114 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,1-Dichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,1-Dichloroethene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,1-Dichloropropene | 2.82 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.56 | 0.300 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dibromoethane | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,2-Dichloroethane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,2-Dichloropropane | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,3-Dichloropropane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,4-Dioxane - Screen | 60.3 | 5.00 | mg/kg wet | 50.00 | | 121 | 44-241 | | | |
| 1-Chlorohexane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 2,2-Dichloropropane | 2.62 | 0.100 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 2-Butanone | 12.3 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| 2-Chlorotoluene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 2-Hexanone | 12.5 | 0.500 | mg/kg wet | 12.50 | | 100 | 70-130 | | | |
| 4-Chlorotoluene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 4-Isopropyltoluene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.9 | 0.500 | mg/kg wet | 12.50 | | 103 | 70-130 | | | |
| Acetone | 12.7 | 1.25 | mg/kg wet | 12.50 | | 102 | 70-130 | | | |
| Benzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Bromobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Bromochloromethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Bromodichloromethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Bromoform | 2.77 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Bromomethane | 2.81 | 0.100 | mg/kg wet | 2.500 | | 113 | 70-130 | | | |
| Carbon Disulfide | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Carbon Tetrachloride | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Chlorobenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Chloroethane | 2.38 | 0.100 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Chloroform | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Chloromethane | 2.42 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.82 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Dibromochloromethane | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Dibromomethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Dichlorodifluoromethane | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Diethyl Ether | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Di-isopropyl ether | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Ethylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Hexachlorobutadiene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Isopropylbenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Methylene Chloride | 2.55 | 0.250 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Naphthalene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| n-Butylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| n-Propylbenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| sec-Butylbenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Styrene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| tert-Butylbenzene | 2.95 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Tetrachloroethene | 1.92 | 0.0500 | mg/kg wet | 2.500 | | 77 | 70-130 | | | |
| Tetrahydrofuran | 2.44 | 0.500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Toluene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Trichloroethene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Vinyl Acetate | 2.94 | 0.250 | mg/kg wet | 2.500 | | 118 | 70-130 | | | |
| Vinyl Chloride | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Xylene O | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Xylene P,M | 5.29 | 0.100 | mg/kg wet | 5.000 | | 106 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.47 | | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.41 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.40 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.54 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| 1,1,1,2-Tetrachloroethane | 2.57 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.7 | 25 | |
| 1,1,1-Trichloroethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 4 | 25 | |
| 1,1,2-Trichloroethane | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 5 | 25 | |
| 1,1-Dichloroethane | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| 1,1-Dichloroethene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | 6 | 25 | |
| 1,1-Dichloropropene | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 1 | 25 | |
| 1,2,3-Trichlorobenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| 1,2,3-Trichloropropane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| 1,2,4-Trichlorobenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 2 | 25 | |
| 1,2,4-Trimethylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.57 | 0.300 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.4 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|------|-----|--|
| 1,2-Dibromoethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.2 | 25 | |
| 1,2-Dichlorobenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.04 | 25 | |
| 1,2-Dichloroethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 5 | 25 | |
| 1,2-Dichloropropane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.8 | 25 | |
| 1,3,5-Trimethylbenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.6 | 25 | |
| 1,3-Dichlorobenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.4 | 25 | |
| 1,3-Dichloropropane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.7 | 25 | |
| 1,4-Dichlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0 | 25 | |
| 1,4-Dioxane - Screen | 57.3 | 5.00 | mg/kg wet | 50.00 | | 115 | 44-241 | 5 | 200 | |
| 1-Chlorohexane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 1 | 25 | |
| 2,2-Dichloropropane | 2.49 | 0.100 | mg/kg wet | 2.500 | | 100 | 70-130 | 5 | 25 | |
| 2-Butanone | 11.9 | 1.25 | mg/kg wet | 12.50 | | 95 | 70-130 | 3 | 25 | |
| 2-Chlorotoluene | 2.81 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | 9 | 25 | |
| 2-Hexanone | 12.4 | 0.500 | mg/kg wet | 12.50 | | 99 | 70-130 | 1 | 25 | |
| 4-Chlorotoluene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.2 | 25 | |
| 4-Isopropyltoluene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.6 | 25 | |
| 4-Methyl-2-Pentanone | 12.7 | 0.500 | mg/kg wet | 12.50 | | 102 | 70-130 | 1 | 25 | |
| Acetone | 12.4 | 1.25 | mg/kg wet | 12.50 | | 100 | 70-130 | 2 | 25 | |
| Benzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 2 | 25 | |
| Bromobenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.6 | 25 | |
| Bromochloromethane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 5 | 25 | |
| Bromodichloromethane | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| Bromoform | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 0.8 | 25 | |
| Bromomethane | 2.72 | 0.100 | mg/kg wet | 2.500 | | 109 | 70-130 | 3 | 25 | |
| Carbon Disulfide | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| Carbon Tetrachloride | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 0.8 | 25 | |
| Chlorobenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.3 | 25 | |
| Chloroethane | 2.32 | 0.100 | mg/kg wet | 2.500 | | 93 | 70-130 | 3 | 25 | |
| Chloroform | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 2 | 25 | |
| Chloromethane | 2.36 | 0.100 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| cis-1,2-Dichloroethene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 2 | 25 | |
| cis-1,3-Dichloropropene | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 1 | 25 | |
| Dibromochloromethane | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 0.6 | 25 | |
| Dibromomethane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| Dichlorodifluoromethane | 2.29 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 2 | 25 | |
| Diethyl Ether | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| Di-isopropyl ether | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| Ethyl tertiary-butyl ether | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| Ethylbenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.3 | 25 | |
| Hexachlorobutadiene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.3 | 25 | |
| Isopropylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.8 | 25 | |
| Methyl tert-Butyl Ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 1 | 25 | |
| Methylene Chloride | 2.49 | 0.250 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| Naphthalene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 2 | 25 | |
| n-Butylbenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 3 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

| | | | | | | | | | | |
|---|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| n-Propylbenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 5 | 25 | |
| sec-Butylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 1 | 25 | |
| Styrene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| tert-Butylbenzene | 2.94 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | 0.3 | 25 | |
| Tertiary-amyl methyl ether | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 3 | 25 | |
| Tetrachloroethene | 1.89 | 0.0500 | mg/kg wet | 2.500 | | 76 | 70-130 | 1 | 25 | |
| Tetrahydrofuran | 2.90 | 0.500 | mg/kg wet | 2.500 | | 116 | 70-130 | 17 | 25 | |
| Toluene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 2 | 25 | |
| trans-1,2-Dichloroethene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| trans-1,3-Dichloropropene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Trichloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| Vinyl Acetate | 2.85 | 0.250 | mg/kg wet | 2.500 | | 114 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 5 | 25 | |
| Xylene O | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.2 | 25 | |
| Xylene P,M | 5.32 | 0.100 | mg/kg wet | 5.000 | | 106 | 70-130 | 0.6 | 25 | |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 2.44 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 2.45 | | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| <i>Surrogate: Dibromofluoromethane</i> | 2.35 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| <i>Surrogate: Toluene-d8</i> | 2.51 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |

Batch CE42730 - 5035

| Blank | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------|--------|--------|-----------|--|--|--|--|--|--|---|
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0130 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|--------|--------|-----------|-------------|---------------|------|-------------|-----|-----------|-----------|
| 5035/8260B Volatile Organic Compounds / Methanol | | | | | | | | | | |
| Batch CE42730 - 5035 | | | | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.18 | | mg/kg wet | 2.500 | | 87 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.19 | | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.22 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| LCS | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 2.55 | 0.100 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1-Dichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1-Dichloroethene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,1-Dichloropropene | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.57 | 0.300 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,2-Dibromoethane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,2-Dichloroethane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dichloropropane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,3-Dichloropropane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,4-Dioxane - Screen | 59.9 | 5.00 | mg/kg wet | 50.00 | | 120 | 44-241 | | | |
| 1-Chlorohexane | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 2,2-Dichloropropane | 2.65 | 0.100 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 2-Butanone | 12.2 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| 2-Chlorotoluene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 2-Hexanone | 12.3 | 0.500 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| 4-Chlorotoluene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 4-Isopropyltoluene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.4 | 0.500 | mg/kg wet | 12.50 | | 99 | 70-130 | | | |
| Acetone | 12.5 | 1.25 | mg/kg wet | 12.50 | | 100 | 70-130 | | | |
| Benzene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| Bromobenzene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Bromochloromethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromodichloromethane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromoform | 2.81 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| Bromomethane | 2.41 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Carbon Disulfide | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Carbon Tetrachloride | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Chlorobenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Chloroethane | 2.52 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Chloroform | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Chloromethane | 2.30 | 0.100 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| Dibromochloromethane | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Dibromomethane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Dichlorodifluoromethane | 1.99 | 0.0500 | mg/kg wet | 2.500 | | 80 | 70-130 | | | |
| Diethyl Ether | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Di-isopropyl ether | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Ethylbenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Hexachlorobutadiene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Isopropylbenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Methylene Chloride | 2.46 | 0.250 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Naphthalene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| n-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| n-Propylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| sec-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Styrene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| tert-Butylbenzene | 2.93 | 0.0500 | mg/kg wet | 2.500 | | 117 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Tetrachloroethene | 1.90 | 0.0500 | mg/kg wet | 2.500 | | 76 | 70-130 | | | |
| Tetrahydrofuran | 2.43 | 0.500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Toluene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Trichloroethene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Vinyl Acetate | 2.87 | 0.250 | mg/kg wet | 2.500 | | 115 | 70-130 | | | |
| Vinyl Chloride | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Xylene O | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Xylene P,M | 5.32 | 0.100 | mg/kg wet | 5.000 | | 106 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.27 | | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.24 | | mg/kg wet | 2.500 | | 90 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.29 | | mg/kg wet | 2.500 | | 92 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|---------------------------|------|--------|-----------|-------|--|-----|--------|------|----|--|
| 1,1,1,2-Tetrachloroethane | 2.51 | 0.100 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| 1,1,1-Trichloroethane | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.6 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 5 | 25 | |
| 1,1,2-Trichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| 1,1-Dichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.08 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|------|-----|--|
| 1,1-Dichloroethene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.1 | 25 | |
| 1,1-Dichloropropene | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.6 | 25 | |
| 1,2,3-Trichlorobenzene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 2 | 25 | |
| 1,2,3-Trichloropropane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 5 | 25 | |
| 1,2,4-Trichlorobenzene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 0.9 | 25 | |
| 1,2,4-Trimethylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.08 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.46 | 0.300 | mg/kg wet | 2.500 | | 99 | 70-130 | 4 | 25 | |
| 1,2-Dibromoethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| 1,2-Dichlorobenzene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 2 | 25 | |
| 1,2-Dichloroethane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.5 | 25 | |
| 1,2-Dichloropropane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.3 | 25 | |
| 1,3,5-Trimethylbenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.8 | 25 | |
| 1,3-Dichlorobenzene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.7 | 25 | |
| 1,3-Dichloropropane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| 1,4-Dichlorobenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| 1,4-Dioxane - Screen | 58.4 | 5.00 | mg/kg wet | 50.00 | | 117 | 44-241 | 3 | 200 | |
| 1-Chlorohexane | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 3 | 25 | |
| 2,2-Dichloropropane | 2.59 | 0.100 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| 2-Butanone | 11.8 | 1.25 | mg/kg wet | 12.50 | | 94 | 70-130 | 4 | 25 | |
| 2-Chlorotoluene | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 5 | 25 | |
| 2-Hexanone | 11.6 | 0.500 | mg/kg wet | 12.50 | | 93 | 70-130 | 6 | 25 | |
| 4-Chlorotoluene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| 4-Isopropyltoluene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.08 | 25 | |
| 4-Methyl-2-Pentanone | 12.1 | 0.500 | mg/kg wet | 12.50 | | 96 | 70-130 | 3 | 25 | |
| Acetone | 12.3 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | 2 | 25 | |
| Benzene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 0.5 | 25 | |
| Bromobenzene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 0.1 | 25 | |
| Bromochloromethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| Bromodichloromethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.3 | 25 | |
| Bromoform | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 3 | 25 | |
| Bromomethane | 2.33 | 0.100 | mg/kg wet | 2.500 | | 93 | 70-130 | 4 | 25 | |
| Carbon Disulfide | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| Carbon Tetrachloride | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.6 | 25 | |
| Chlorobenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.8 | 25 | |
| Chloroethane | 2.33 | 0.100 | mg/kg wet | 2.500 | | 93 | 70-130 | 8 | 25 | |
| Chloroform | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.9 | 25 | |
| Chloromethane | 2.29 | 0.100 | mg/kg wet | 2.500 | | 91 | 70-130 | 0.5 | 25 | |
| cis-1,2-Dichloroethene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| cis-1,3-Dichloropropene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 0.07 | 25 | |
| Dibromochloromethane | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.5 | 25 | |
| Dibromomethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.4 | 25 | |
| Dichlorodifluoromethane | 1.94 | 0.0500 | mg/kg wet | 2.500 | | 78 | 70-130 | 2 | 25 | |
| Diethyl Ether | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| Di-isopropyl ether | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.08 | 25 | |
| Ethyl tertiary-butyl ether | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.1 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| Ethylbenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.5 | 25 | |
| Hexachlorobutadiene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 4 | 25 | |
| Isopropylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.8 | 25 | |
| Methyl tert-Butyl Ether | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| Methylene Chloride | 2.49 | 0.250 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| Naphthalene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 1 | 25 | |
| n-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.2 | 25 | |
| n-Propylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| sec-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.2 | 25 | |
| Styrene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.4 | 25 | |
| tert-Butylbenzene | 2.95 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | 0.7 | 25 | |
| Tertiary-amyl methyl ether | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| Tetrachloroethene | 1.88 | 0.0500 | mg/kg wet | 2.500 | | 75 | 70-130 | 0.6 | 25 | |
| Tetrahydrofuran | 2.81 | 0.500 | mg/kg wet | 2.500 | | 112 | 70-130 | 15 | 25 | |
| Toluene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 2 | 25 | |
| trans-1,2-Dichloroethene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.7 | 25 | |
| trans-1,3-Dichloropropene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 1 | 25 | |
| Trichloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| Vinyl Acetate | 2.79 | 0.250 | mg/kg wet | 2.500 | | 112 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 1 | 25 | |
| Xylene O | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| Xylene P,M | 5.33 | 0.100 | mg/kg wet | 5.000 | | 107 | 70-130 | 0.2 | 25 | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.21 | | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.25 | | mg/kg wet | 2.500 | | 90 | 70-130 | | | |

8100M Total Petroleum Hydrocarbons

Batch CE42107 - 3546

| Blank | | | | | | | | | | |
|------------------------------|----|------|-----------|--|--|--|--|--|--|--|
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacotane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8100M Total Petroleum Hydrocarbons

Batch CE42107 - 3546

| | | | | | | | | | | |
|-------------------------------|------|------|-----------|-------|--|-----|--------|--|--|--|
| <i>Surrogate: O-Terphenyl</i> | 4.35 | | mg/kg wet | 5.000 | | 87 | 40-140 | | | |
| LCS | | | | | | | | | | |
| Decane (C10) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Docosane (C22) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | | | |
| Dodecane (C12) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 93 | 40-140 | | | |
| Eicosane (C20) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | | | |
| Hexacosane (C26) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | | | |
| Hexadecane (C16) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | | | |
| Nonadecane (C19) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | | | |
| Nonane (C9) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 76 | 30-140 | | | |
| Octacosane (C28) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 99 | 40-140 | | | |
| Octadecane (C18) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | | | |
| Tetracosane (C24) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 98 | 40-140 | | | |
| Tetradecane (C14) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 34.8 | 37.5 | mg/kg wet | 35.00 | | 99 | 40-140 | | | |
| Triacontane (C30) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 100 | 40-140 | | | |

| | | | | | | | | | | |
|-------------------------------|------|------|-----------|-------|--|-----|--------|---|----|--|
| <i>Surrogate: O-Terphenyl</i> | 4.24 | | mg/kg wet | 5.000 | | 85 | 40-140 | | | |
| LCS Dup | | | | | | | | | | |
| Decane (C10) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 93 | 40-140 | 7 | 25 | |
| Docosane (C22) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 101 | 40-140 | 5 | 25 | |
| Dodecane (C12) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 100 | 40-140 | 7 | 25 | |
| Eicosane (C20) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 102 | 40-140 | 5 | 25 | |
| Hexacosane (C26) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 103 | 40-140 | 6 | 25 | |
| Hexadecane (C16) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | 3 | 25 | |
| Nonadecane (C19) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 104 | 40-140 | 7 | 25 | |
| Nonane (C9) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 82 | 30-140 | 8 | 25 | |
| Octacosane (C28) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 104 | 40-140 | 5 | 25 | |
| Octadecane (C18) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 102 | 40-140 | 7 | 25 | |
| Tetracosane (C24) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 104 | 40-140 | 6 | 25 | |
| Tetradecane (C14) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | 4 | 25 | |
| Total Petroleum Hydrocarbons | 37.1 | 37.5 | mg/kg wet | 35.00 | | 106 | 40-140 | 6 | 25 | |
| Triacontane (C30) | 2.7 | 0.2 | mg/kg wet | 2.500 | | 106 | 40-140 | 6 | 25 | |

| | | | | | | | | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|
| <i>Surrogate: O-Terphenyl</i> | 4.43 | | mg/kg wet | 5.000 | | 89 | 40-140 | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42011 - 3546

| | | | | | | | | | | |
|---------------------|----|-------|-----------|--|--|--|--|--|--|--|
| Blank | | | | | | | | | | |
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)anthracene | ND | 0.333 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42011 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| Benzo(a)pyrene | ND | 0.167 | mg/kg wet | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Chrysene | ND | 0.167 | mg/kg wet | | | | | | | |
| Dibenzo(a,h)Anthracene | ND | 0.167 | mg/kg wet | | | | | | | |
| Fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Fluorene | ND | 0.333 | mg/kg wet | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Phenanthrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.71 | | mg/kg wet | 3.333 | | 81 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.04 | | mg/kg wet | 3.333 | | 91 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.64 | | mg/kg wet | 3.333 | | 79 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 4.12 | | mg/kg wet | 3.333 | | 123 | 30-130 | | | |

LCS

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | 2.59 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | | | |
| Acenaphthene | 2.60 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | | | |
| Acenaphthylene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | | | |
| Anthracene | 2.70 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Benzo(a)anthracene | 2.98 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | | | |
| Benzo(a)pyrene | 2.70 | 0.167 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Benzo(b)fluoranthene | 3.21 | 0.333 | mg/kg wet | 3.333 | | 96 | 40-140 | | | |
| Benzo(g,h,i)perylene | 2.99 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | | | |
| Benzo(k)fluoranthene | 2.86 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Chrysene | 2.88 | 0.167 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Dibenzo(a,h)Anthracene | 3.31 | 0.167 | mg/kg wet | 3.333 | | 99 | 40-140 | | | |
| Fluoranthene | 2.90 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Fluorene | 2.73 | 0.333 | mg/kg wet | 3.333 | | 82 | 40-140 | | | |
| Indeno(1,2,3-cd)Pyrene | 3.31 | 0.333 | mg/kg wet | 3.333 | | 99 | 40-140 | | | |
| Naphthalene | 2.66 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | | | |
| Phenanthrene | 2.75 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | | | |
| Pyrene | 3.06 | 0.333 | mg/kg wet | 3.333 | | 92 | 40-140 | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.81 | | mg/kg wet | 3.333 | | 84 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.11 | | mg/kg wet | 3.333 | | 93 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.70 | | mg/kg wet | 3.333 | | 81 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.78 | | mg/kg wet | 3.333 | | 113 | 30-130 | | | |

LCS Dup

| | | | | | | | | | | |
|---------------------|------|-------|-----------|-------|--|----|--------|----|----|--|
| 2-Methylnaphthalene | 2.17 | 0.333 | mg/kg wet | 3.333 | | 65 | 40-140 | 18 | 30 | |
| Acenaphthene | 2.34 | 0.333 | mg/kg wet | 3.333 | | 70 | 40-140 | 11 | 30 | |
| Acenaphthylene | 2.36 | 0.333 | mg/kg wet | 3.333 | | 71 | 40-140 | 11 | 30 | |
| Anthracene | 2.58 | 0.333 | mg/kg wet | 3.333 | | 77 | 40-140 | 4 | 30 | |
| Benzo(a)anthracene | 2.87 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 4 | 30 | |
| Benzo(a)pyrene | 2.62 | 0.167 | mg/kg wet | 3.333 | | 78 | 40-140 | 3 | 30 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42011 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|----|----|--|
| Benzo(b)fluoranthene | 3.14 | 0.333 | mg/kg wet | 3.333 | | 94 | 40-140 | 2 | 30 | |
| Benzo(g,h,i)perylene | 2.92 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | 2 | 30 | |
| Benzo(k)fluoranthene | 2.72 | 0.333 | mg/kg wet | 3.333 | | 82 | 40-140 | 5 | 30 | |
| Chrysene | 2.71 | 0.167 | mg/kg wet | 3.333 | | 81 | 40-140 | 6 | 30 | |
| Dibenzo(a,h)Anthracene | 3.26 | 0.167 | mg/kg wet | 3.333 | | 98 | 40-140 | 2 | 30 | |
| Fluoranthene | 2.84 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | 2 | 30 | |
| Fluorene | 2.49 | 0.333 | mg/kg wet | 3.333 | | 75 | 40-140 | 9 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 3.23 | 0.333 | mg/kg wet | 3.333 | | 97 | 40-140 | 2 | 30 | |
| Naphthalene | 2.25 | 0.333 | mg/kg wet | 3.333 | | 68 | 40-140 | 16 | 30 | |
| Phenanthrene | 2.67 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 3 | 30 | |
| Pyrene | 2.80 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | 9 | 30 | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.24 | | mg/kg wet | 3.333 | | 67 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 2.56 | | mg/kg wet | 3.333 | | 77 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.21 | | mg/kg wet | 3.333 | | 66 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.34 | | mg/kg wet | 3.333 | | 100 | 30-130 | | | |

Classical Chemistry

Batch CE42823 - TCN Prep

| | | | | | | | | | | |
|------------------|------|------|-----------|--------|--|-----|--------|--|--|--|
| Blank | | | | | | | | | | |
| Total Cyanide | ND | 0.02 | mg/kg wet | | | | | | | |
| LCS | | | | | | | | | | |
| Total Cyanide | 0.11 | 0.02 | mg/kg wet | 0.1003 | | 105 | 90-110 | | | |
| Reference | | | | | | | | | | |
| Total Cyanide | 109 | 4.93 | mg/kg wet | 101.0 | | 108 | 31-168 | | | |
| Reference | | | | | | | | | | |
| Total Cyanide | 110 | 4.92 | mg/kg wet | 101.0 | | 109 | 31-168 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

Notes and Definitions

- U Analyte included in the analysis, but not detected
- R- Standard Reference Material is biased low (R-).
- J Reported between MDL and MRL
- D Diluted.
- B Present in Method Blank (B).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405485

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 14050485
Date Project Due: 5/28/14
Days For Project: 5 Day

Items to be checked upon receipt:

- 1. Air Bill Manifest Present? * No
- Air No.: _____
- 2. Were Custody Seals Present? No
- 3. Were Custody Seals Intact? N/A
- 4. Is Radiation count < 100 CPM? Yes
- 5. Is a cooler present? Yes
- Cooler Temp: 2.7
- Iced With: Ice
- 6. Was COC included with samples? Yes
- 7. Was COC signed and dated by client? Yes
- 8. Does the COC match the sample Yes
- 9. Is COC complete and correct? Yes
- 10. Are the samples properly preserved? Yes
- 11. Proper sample containers used? Yes
- 12. Any air bubbles in the VOA vials? N/A
- 13. Holding times exceeded? No
- 14. Sufficient sample volumes? Yes
- 15. Any Subcontracting needed? No
- 16. Are ESS labels on correct containers? Yes No
- 17. Were samples received intact? Yes No
- ESS Sample IDs: _____
- Sub Lab: _____
- Analysis: _____
- TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

Re-log of 1405429-04, -06, -09, -16

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 8 oz Soil Jar | 2 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 8 oz Soil Jar | 1 | NP |
| 3 | Yes | 40 ml - VOA | 1 | MeOH |
| 3 | Yes | 8 oz Soil Jar | 1 | NP |
| 4 | Yes | 40 ml - VOA | 1 | MeOH |

Completed By: [Signature]
Reviewed By: [Signature]

Date/Time: 5/21/14 1523
Date/Time: 5/21/14 1758

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

1405485
 Page 1 of 2

| | | |
|--|--|--|
| Turn Time <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other _____ If faster than 5 days, prior approval by laboratory is required # _____ | Reporting Limits | ESS LAB PROJECT ID 1405429 |
| State where samples were collected from: MA (RI) CT NH NJ NY ME Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ | |
| Is this project for any of the following: MA-MCP Navy USACE Other _____ | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ | |

| | | | | |
|----------------------------------|-------------|--------------------------------------|---|--|
| Co. Name GPA Environmental | | Project # T-03 33554.00 | Project Name (20 Char. or less) 642 Allens Ave | |
| Contact Person Meg Klapetnick | | Address 530 Broadway | | |
| City Providence | State RI | Zip 02909 | PO# | |
| Telephone # 401-421-4170 | Fax # | Email Address mklapetnick@gpa.com | | |

| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | Write Required Analysis |
|------------------|---------|-----------------|------|------|--------|--|-----------|----------------------|--------------------|-------------------------|
| | 5-14-14 | 9:25 | | | S | 62-3075 S-1A | 116 | 2 | 40 | X |
| 2 | | 9:30 | | | | 62-3075 S-1B | X | X | | |
| 3 | | 9:55 | | | | 62-3075 S-2 | | | | XXXXX |
| 4 | | 10:05 | | | | 62-3075 S-3 | | | | XXXXX |
| 5 | | 1315 | | | | 62-3085 S-1 | | | | XXXXXX |
| 6 | | 1330 | | | | 62-3085 S-2 | | | | XXXXXX |
| 7 | | 11:05 | | | | 62-309d S-1 | | | | |
| 8 | | 11:20 | | | | 62-309d S-2 | | | | XXXXXX |
| 9 | | 11:35 | | | | 62-309d S-3 | | | | XXXXXX |
| 10 | | 0600 | | | | TRIP BLANK 51914 | 6 | 1 | 1 | |

VOCs 5055A/5055C
 PAH 3550B/3550C
 PP-13 600/700S
 total cyanide 900S
 TPH 8100M

①
②
③
④

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | | |
|--|-----------------------|---|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Internal Use Only | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- Zn Act, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No NA: _____ | [] Pickup | Sampled by: Sophia Narkewicz / Matt Begen |
| Cooler Temp: 2.7 °C | [] Technicians _____ | Comments: HOLD ALL SAMPLES No for Sample # 1 |

| | | | | | | | |
|---|----------------------------|---|----------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) [Signature] | Date/Time 5/14/14 18:10 | Received by: (Signature) [Signature] | Date/Time 5/19/14 17:10 | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

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CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554.00 T-23)
ESS Laboratory Work Order Number: 1405486

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 3:41 pm, May 30, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

SAMPLE RECEIPT

The following samples were received on May 21, 2014 for the analyses specified on the enclosed Chain of Custody Record.

These samples were originally received on hold on May 20, 2014.

| <u>Lab Number</u> | <u>Sample Name</u> | <u>Matrix</u> | <u>Analysis</u> |
|-------------------|--------------------|---------------|--|
| 1405486-01 | GZ-321s S-2 | Soil | 1311, 1311/6010B, 6010B, 7.3.3.2, 7.3.4.1, 7471A, 8082A, 8100M, 8260B, 8270D, 9045 |
| 1405486-02 | GZ-322s S-2 | Soil | 1311, 1311/6010B, 6010B, 7.3.3.2, 7.3.4.1, 7471A, 8082A, 8100M, 8260B, 8270D, 9045 |
| 1405486-03 | GZ-323s S-2 | Soil | 1311, 1311/6010B, 6010B, 7.3.3.2, 7.3.4.1, 7471A, 8082A, 8100M, 8260B, 8270D, 9045 |
| 1405486-04 | GZ-324 S-2 | Soil | 1311, 1311/6010B, 6010B, 7.3.3.2, 7.3.4.1, 7471A, 8082A, 8100M, 8260B, 8270D, 9045 |
| 1405486-05 | BD-052014 | Soil | 1311, 1311/6010B, 6010B, 7.3.3.2, 7.3.4.1, 7471A, 8082A, 8100M, 8260B, 8270D, 9045 |
| 1405486-06 | Trip Blank 52014 | Solid | 8260B |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

- 1405486-01 [Present in Method Blank \(B\).](#)
Chloroform
- 1405486-02 [Present in Method Blank \(B\).](#)
Chloroform
- 1405486-03 [Present in Method Blank \(B\).](#)
Chloroform
- 1405486-05 [Present in Method Blank \(B\).](#)
Chloroform
- 1405486-06 [Present in Method Blank \(B\).](#)
Chloroform

8270C Semi-Volatile Organic Compounds

- CE42011-BSD1 [Blank Spike recovery is below lower control limit \(B-\).](#)
Hexachlorocyclopentadiene (35% @ 40-140%)
- CXE0304-CCV1 [Calibration required quadratic regression \(Q\).](#)
2,4-Dinitrophenol (66% @ 80-120%), Pentachlorophenol (91% @ 80-120%)
- CXE0304-CCV1 [Continuing Calibration recovery is below lower control limit \(C-\).](#)
2,4-Dinitrophenol (66% @ 80-120%), Benzoic Acid (59% @ 80-120%), Hexachlorocyclopentadiene (66% @ 80-120%)
- CXE0304-CCV1 [Initial Calibration Verification recovery is outside of control limit \(ICV\).](#)
4-Chloroaniline , Hexachlorocyclopentadiene
- CXE0321-CCV1 [Calibration required quadratic regression \(Q\).](#)
2,4-Dinitrophenol (66% @ 80-120%), Pentachlorophenol (94% @ 80-120%)
- CXE0321-CCV1 [Continuing Calibration recovery is above upper control limit \(C+\).](#)
Di-n-octylphthalate (125% @ 80-120%)
- CXE0321-CCV1 [Continuing Calibration recovery is below lower control limit \(C-\).](#)
2,4-Dinitrophenol (66% @ 80-120%), Benzoic Acid (52% @ 80-120%), Hexachlorocyclopentadiene (64% @ 80-120%)
- CXE0321-CCV1 [Initial Calibration Verification recovery is outside of control limit \(ICV\).](#)
4-Chloroaniline , Hexachlorocyclopentadiene
- CXE0321-CCV1 [Surrogate recovery\(ies\) above upper control limit \(S+\).](#)
2,4,6-Tribromophenol (124% @ 80-120%)

Total Metals Solid

- CE42308-SRM1 [Standard Reference Material is biased low \(R-\).](#)
Silver (37% @ 70-130%)

No other observations noted.

End of Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

DATA USABILITY LINKS

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 5/23/14 17:05

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | ND (0.050) | | 1311/6010B | | 1 | KJK | 05/28/14 0:17 | 50 | 50 | CE42402 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Arsenic | 10.3 (2.2) | | 6010B | | 1 | JP | 05/28/14 9:12 | 2.46 | 100 | CE42308 |
| Barium | 17.2 (2.2) | | 6010B | | 1 | JP | 05/28/14 9:12 | 2.46 | 100 | CE42308 |
| Cadmium | ND (0.44) | | 6010B | | 1 | JP | 05/28/14 9:12 | 2.46 | 100 | CE42308 |
| Chromium | 5.7 (0.9) | | 6010B | | 1 | JP | 05/28/14 9:12 | 2.46 | 100 | CE42308 |
| Lead | 42.7 (4.3) | | 6010B | | 1 | JP | 05/28/14 9:12 | 2.46 | 100 | CE42308 |
| Mercury | ND (0.033) | | 7471A | | 1 | KJK | 05/23/14 16:34 | 0.64 | 40 | CE42310 |
| Selenium | ND (8.7) | | 6010B | | 2 | KJK | 05/29/14 13:42 | 2.46 | 100 | CE42308 |
| Silver | 0.55 (0.44) | | 6010B | | 1 | JP | 05/28/14 9:12 | 2.46 | 100 | CE42308 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94
Initial Volume: 22.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0790) | 0.0069 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,1,1-Trichloroethane | ND (0.0395) | 0.0070 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,1,2,2-Tetrachloroethane | ND (0.0395) | 0.0107 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,1,2-Trichloroethane | ND (0.0395) | 0.0099 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,1-Dichloroethane | ND (0.0395) | 0.0063 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,1-Dichloroethene | ND (0.0395) | 0.0097 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,1-Dichloropropene | ND (0.0395) | 0.0061 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,2,3-Trichlorobenzene | ND (0.0395) | 0.0132 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,2,3-Trichloropropane | ND (0.0395) | 0.0098 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,2,4-Trichlorobenzene | ND (0.0395) | 0.0087 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,2,4-Trimethylbenzene | ND (0.0395) | 0.0076 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,2-Dibromo-3-Chloropropane | ND (0.237) | 0.0790 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,2-Dibromoethane | ND (0.0395) | 0.0100 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,2-Dichlorobenzene | ND (0.0395) | 0.0056 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,2-Dichloroethane | ND (0.0395) | 0.0106 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,2-Dichloropropane | ND (0.0395) | 0.0104 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,3,5-Trimethylbenzene | ND (0.0395) | 0.0070 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,3-Dichlorobenzene | ND (0.0395) | 0.0050 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,3-Dichloropropane | ND (0.0395) | 0.0089 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,4-Dichlorobenzene | ND (0.0395) | 0.0105 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1,4-Dioxane - Screen | ND (3.95) | 1.32 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 1-Chlorohexane | ND (0.0395) | 0.0075 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 2,2-Dichloropropane | ND (0.0790) | 0.0135 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 2-Butanone | ND (0.988) | 0.228 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 2-Chlorotoluene | ND (0.0395) | 0.0111 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 2-Hexanone | ND (0.395) | 0.0680 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 4-Chlorotoluene | ND (0.0395) | 0.0051 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 4-Isopropyltoluene | ND (0.0395) | 0.0070 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| 4-Methyl-2-Pentanone | ND (0.395) | 0.0476 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Acetone | ND (0.988) | 0.292 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Benzene | ND (0.0395) | 0.0064 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Bromobenzene | ND (0.0395) | 0.0108 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94
Initial Volume: 22.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0395) | 0.0128 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Bromodichloromethane | ND (0.0395) | 0.0055 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Bromoform | ND (0.0395) | 0.0114 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Bromomethane | ND (0.0790) | 0.0264 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Carbon Disulfide | ND (0.0395) | 0.0058 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Carbon Tetrachloride | ND (0.0395) | 0.0069 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Chlorobenzene | ND (0.0395) | 0.0062 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Chloroethane | ND (0.0790) | 0.0263 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Chloroform | B, J 0.0119 (0.0395) | 0.0081 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Chloromethane | ND (0.0790) | 0.0100 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| cis-1,2-Dichloroethene | ND (0.0395) | 0.0098 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| cis-1,3-Dichloropropene | ND (0.0395) | 0.0089 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Dibromochloromethane | ND (0.0395) | 0.0100 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Dibromomethane | ND (0.0395) | 0.0125 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Dichlorodifluoromethane | ND (0.0395) | 0.0069 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Diethyl Ether | ND (0.0395) | 0.0100 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Di-isopropyl ether | ND (0.0395) | 0.0074 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Ethyl tertiary-butyl ether | ND (0.0395) | 0.0100 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Ethylbenzene | ND (0.0395) | 0.0051 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Hexachlorobutadiene | ND (0.0395) | 0.0132 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Isopropylbenzene | ND (0.0395) | 0.0070 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Methyl tert-Butyl Ether | ND (0.0395) | 0.0063 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Methylene Chloride | ND (0.198) | 0.0104 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Naphthalene | 0.0435 (0.0395) | 0.0104 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| n-Butylbenzene | ND (0.0395) | 0.0097 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| n-Propylbenzene | ND (0.0395) | 0.0096 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| sec-Butylbenzene | ND (0.0395) | 0.0053 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Styrene | ND (0.0395) | 0.0052 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| tert-Butylbenzene | ND (0.0395) | 0.0092 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Tertiary-amyl methyl ether | ND (0.0395) | 0.0057 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Tetrachloroethene | ND (0.0395) | 0.0132 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Tetrahydrofuran | ND (0.395) | 0.102 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94
Initial Volume: 22.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0395) | 0.0100 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| trans-1,2-Dichloroethene | ND (0.0395) | 0.0130 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| trans-1,3-Dichloropropene | ND (0.0395) | 0.0122 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Trichloroethene | ND (0.0395) | 0.0081 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Trichlorofluoromethane | ND (0.0395) | 0.0104 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Vinyl Acetate | ND (0.198) | 0.0081 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Vinyl Chloride | ND (0.0395) | 0.0130 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Xylene O | ND (0.0395) | 0.0076 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Xylene P,M | ND (0.0790) | 0.0153 | 8260B | | 1 | 05/23/14 23:44 | CXE0358 | CE42715 |
| Xylenes (Total) | ND (0.0790) | | 8260B | | 1 | 05/23/14 23:44 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>102 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>106 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>104 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>107 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94
Initial Volume: 19.9
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TAJ
Prepared: 5/21/14 18:20

8082 Polychlorinated Biphenyls (PCB)

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aroclor 1016 | ND (0.0536) | | 8082A | | 1 | 05/23/14 18:27 | | CE42106 |
| Aroclor 1221 | ND (0.0536) | | 8082A | | 1 | 05/23/14 18:27 | | CE42106 |
| Aroclor 1232 | ND (0.0536) | | 8082A | | 1 | 05/23/14 18:27 | | CE42106 |
| Aroclor 1242 | ND (0.0536) | | 8082A | | 1 | 05/23/14 18:27 | | CE42106 |
| Aroclor 1248 | ND (0.0536) | | 8082A | | 1 | 05/23/14 18:27 | | CE42106 |
| Aroclor 1254 | ND (0.0536) | | 8082A | | 1 | 05/23/14 18:27 | | CE42106 |
| Aroclor 1260 | ND (0.0536) | | 8082A | | 1 | 05/23/14 18:27 | | CE42106 |
| Aroclor 1262 | ND (0.0536) | | 8082A | | 1 | 05/23/14 18:27 | | CE42106 |
| Aroclor 1268 | ND (0.0536) | | 8082A | | 1 | 05/23/14 18:27 | | CE42106 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: Decachlorobiphenyl</i> | 82 % | | 30-150 |
| <i>Surrogate: Decachlorobiphenyl [2C]</i> | 79 % | | 30-150 |
| <i>Surrogate: Tetrachloro-m-xylene</i> | 72 % | | 30-150 |
| <i>Surrogate: Tetrachloro-m-xylene [2C]</i> | 72 % | | 30-150 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94
Initial Volume: 20.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 5/21/14 17:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | ND (39.0) | | 8100M | | 1 | 05/23/14 19:13 | CXE0332 | CE42107 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 93 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1-Biphenyl | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 1,2,4-Trichlorobenzene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 1,2-Dichlorobenzene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 1,3-Dichlorobenzene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 1,4-Dichlorobenzene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2,3,4,6-Tetrachlorophenol | ND (1.71) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2,4,5-Trichlorophenol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2,4,6-Trichlorophenol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2,4-Dichlorophenol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2,4-Dimethylphenol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2,4-Dinitrophenol | ND (1.71) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2,4-Dinitrotoluene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2,6-Dinitrotoluene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2-Chloronaphthalene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2-Chlorophenol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2-Methylnaphthalene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2-Methylphenol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2-Nitroaniline | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 2-Nitrophenol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 3,3'-Dichlorobenzidine | ND (0.684) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 3+4-Methylphenol | ND (0.684) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 3-Nitroaniline | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 4,6-Dinitro-2-Methylphenol | ND (1.71) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 4-Bromophenyl-phenylether | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 4-Chloro-3-Methylphenol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 4-Chloroaniline | ND (0.684) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 4-Chloro-phenyl-phenyl ether | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 4-Nitroaniline | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| 4-Nitrophenol | ND (1.71) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Acenaphthene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Acenaphthylene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Acetophenone | ND (0.684) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aniline | ND (0.684) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Anthracene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Azobenzene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Benzo(a)anthracene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Benzo(a)pyrene | ND (0.171) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Benzo(b)fluoranthene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Benzo(g,h,i)perylene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Benzo(k)fluoranthene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Benzoic Acid | ND (1.71) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Benzyl Alcohol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| bis(2-Chloroethoxy)methane | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| bis(2-Chloroethyl)ether | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| bis(2-chloroisopropyl)Ether | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| bis(2-Ethylhexyl)phthalate | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Butylbenzylphthalate | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Carbazole | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Chrysene | ND (0.171) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Dibenzo(a,h)Anthracene | ND (0.171) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Dibenzofuran | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Diethylphthalate | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Dimethylphthalate | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Di-n-butylphthalate | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Di-n-octylphthalate | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Fluoranthene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Fluorene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Hexachlorobenzene | ND (0.171) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Hexachlorobutadiene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Hexachlorocyclopentadiene | ND (1.71) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Hexachloroethane | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Indeno(1,2,3-cd)Pyrene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Isophorone | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Naphthalene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Nitrobenzene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| N-Nitrosodimethylamine | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| N-Nitroso-Di-n-Propylamine | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| N-nitrosodiphenylamine | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Pentachlorophenol | ND (1.71) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Phenanthrene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Phenol | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Pyrene | ND (0.341) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |
| Pyridine | ND (1.71) | | 8270D | | 1 | 05/22/14 11:12 | CXE0321 | CE42011 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | <i>76 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2,4,6-Tribromophenol</i> | <i>123 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Chlorophenol-d4</i> | <i>75 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Fluorobiphenyl</i> | <i>88 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Fluorophenol</i> | <i>63 %</i> | | <i>30-130</i> |
| <i>Surrogate: Nitrobenzene-d5</i> | <i>74 %</i> | | <i>30-130</i> |
| <i>Surrogate: Phenol-d6</i> | <i>75 %</i> | | <i>30-130</i> |
| <i>Surrogate: p-Terphenyl-d14</i> | <i>121 %</i> | | <i>30-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|------------------------------|---------------------------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Corrosivity (pH) | 4.04 (N/A) | | 9045 | | 1 | MJV | 05/21/14 17:53 | S.U. | CE42149 |
| Corrosivity (pH) Sample Temp | Soil pH measured in water at 24.1 °C. | | | | | | | | |
| Reactive Cyanide | ND (2.0) | | 7.3.3.2 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |
| Reactive Sulfide | ND (2.0) | | 7.3.4.1 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-321s S-2
Date Sampled: 05/20/14 15:15
Percent Solids: 94
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-01
Sample Matrix: Soil
Units: °C
Analyst: KJK
Prepared: 5/23/14 17:05

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 5/23/14 17:05

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | ND (0.050) | | 1311/6010B | | 1 | KJK | 05/28/14 0:21 | 50 | 50 | CE42402 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Arsenic | 12.0 (2.3) | | 6010B | | 1 | JP | 05/28/14 9:45 | 2.43 | 100 | CE42308 |
| Barium | 26.3 (2.3) | | 6010B | | 1 | JP | 05/28/14 9:45 | 2.43 | 100 | CE42308 |
| Cadmium | ND (0.46) | | 6010B | | 1 | JP | 05/28/14 9:45 | 2.43 | 100 | CE42308 |
| Chromium | 4.0 (0.9) | | 6010B | | 1 | JP | 05/28/14 9:45 | 2.43 | 100 | CE42308 |
| Lead | 86.6 (4.6) | | 6010B | | 1 | JP | 05/28/14 9:45 | 2.43 | 100 | CE42308 |
| Mercury | 0.316 (0.032) | | 7471A | | 1 | KJK | 05/23/14 16:53 | 0.69 | 40 | CE42310 |
| Selenium | ND (13.7) | | 6010B | | 3 | KJK | 05/29/14 14:15 | 2.43 | 100 | CE42308 |
| Silver | 0.81 (0.46) | | 6010B | | 1 | JP | 05/28/14 9:45 | 2.43 | 100 | CE42308 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90
Initial Volume: 16.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.114) | 0.0099 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,1,1-Trichloroethane | ND (0.0570) | 0.0100 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,1,2,2-Tetrachloroethane | ND (0.0570) | 0.0155 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,1,2-Trichloroethane | ND (0.0570) | 0.0143 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,1-Dichloroethane | ND (0.0570) | 0.0091 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,1-Dichloroethene | ND (0.0570) | 0.0140 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,1-Dichloropropene | ND (0.0570) | 0.0088 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,2,3-Trichlorobenzene | ND (0.0570) | 0.0190 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,2,3-Trichloropropane | ND (0.0570) | 0.0141 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,2,4-Trichlorobenzene | ND (0.0570) | 0.0125 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,2,4-Trimethylbenzene | J 0.0354 (0.0570) | 0.0109 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,2-Dibromo-3-Chloropropane | ND (0.342) | 0.114 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,2-Dibromoethane | ND (0.0570) | 0.0145 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,2-Dichlorobenzene | ND (0.0570) | 0.0081 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,2-Dichloroethane | ND (0.0570) | 0.0153 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,2-Dichloropropane | ND (0.0570) | 0.0149 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,3,5-Trimethylbenzene | J 0.0205 (0.0570) | 0.0100 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,3-Dichlorobenzene | ND (0.0570) | 0.0072 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,3-Dichloropropane | ND (0.0570) | 0.0128 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,4-Dichlorobenzene | ND (0.0570) | 0.0152 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1,4-Dioxane - Screen | ND (5.70) | 1.90 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 1-Chlorohexane | ND (0.0570) | 0.0108 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 2,2-Dichloropropane | ND (0.114) | 0.0195 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 2-Butanone | ND (1.43) | 0.330 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 2-Chlorotoluene | ND (0.0570) | 0.0161 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 2-Hexanone | ND (0.570) | 0.0982 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 4-Chlorotoluene | ND (0.0570) | 0.0074 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 4-Isopropyltoluene | ND (0.0570) | 0.0102 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| 4-Methyl-2-Pentanone | ND (0.570) | 0.0687 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Acetone | ND (1.43) | 0.422 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Benzene | J 0.0228 (0.0570) | 0.0092 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Bromobenzene | ND (0.0570) | 0.0156 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90
Initial Volume: 16.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0570) | 0.0185 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Bromodichloromethane | ND (0.0570) | 0.0079 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Bromoform | ND (0.0570) | 0.0164 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Bromomethane | ND (0.114) | 0.0381 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Carbon Disulfide | ND (0.0570) | 0.0084 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Carbon Tetrachloride | ND (0.0570) | 0.0099 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Chlorobenzene | ND (0.0570) | 0.0090 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Chloroethane | ND (0.114) | 0.0380 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Chloroform | B, J 0.0205 (0.0570) | 0.0117 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Chloromethane | ND (0.114) | 0.0145 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| cis-1,2-Dichloroethene | ND (0.0570) | 0.0141 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| cis-1,3-Dichloropropene | ND (0.0570) | 0.0129 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Dibromochloromethane | ND (0.0570) | 0.0144 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Dibromomethane | ND (0.0570) | 0.0180 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Dichlorodifluoromethane | ND (0.0570) | 0.0099 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Diethyl Ether | ND (0.0570) | 0.0145 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Di-isopropyl ether | ND (0.0570) | 0.0107 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Ethyl tertiary-butyl ether | ND (0.0570) | 0.0144 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Ethylbenzene | J 0.0217 (0.0570) | 0.0074 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Hexachlorobutadiene | ND (0.0570) | 0.0190 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Isopropylbenzene | ND (0.0570) | 0.0100 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Methyl tert-Butyl Ether | ND (0.0570) | 0.0091 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Methylene Chloride | ND (0.285) | 0.0149 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Naphthalene | 0.480 (0.0570) | 0.0149 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| n-Butylbenzene | ND (0.0570) | 0.0140 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| n-Propylbenzene | ND (0.0570) | 0.0139 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| sec-Butylbenzene | ND (0.0570) | 0.0076 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Styrene | J 0.0354 (0.0570) | 0.0075 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| tert-Butylbenzene | ND (0.0570) | 0.0133 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Tertiary-amyl methyl ether | ND (0.0570) | 0.0082 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Tetrachloroethene | ND (0.0570) | 0.0190 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Tetrahydrofuran | ND (0.570) | 0.147 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-322s S-2
 Date Sampled: 05/20/14 14:55
 Percent Solids: 90
 Initial Volume: 16.2
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405486
 ESS Laboratory Sample ID: 1405486-02
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.106 (0.0570) | 0.0145 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| trans-1,2-Dichloroethene | ND (0.0570) | 0.0187 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| trans-1,3-Dichloropropene | ND (0.0570) | 0.0176 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Trichloroethene | ND (0.0570) | 0.0117 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Trichlorofluoromethane | ND (0.0570) | 0.0151 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Vinyl Acetate | ND (0.285) | 0.0117 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Vinyl Chloride | ND (0.0570) | 0.0188 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Xylene O | J 0.0319 (0.0570) | 0.0109 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Xylene P,M | J 0.0969 (0.114) | 0.0221 | 8260B | | 1 | 05/24/14 0:40 | CXE0358 | CE42715 |
| Xylenes (Total) | 0.129 (0.114) | | 8260B | | 1 | 05/24/14 0:40 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 99 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 98 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 101 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 101 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90
Initial Volume: 19.5
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JXS
Prepared: 5/21/14 18:20

8082 Polychlorinated Biphenyls (PCB)

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aroclor 1016 | ND (0.0570) | | 8082A | | 1 | 05/28/14 21:25 | | CE42917 |
| Aroclor 1221 | ND (0.0570) | | 8082A | | 1 | 05/28/14 21:25 | | CE42917 |
| Aroclor 1232 | ND (0.0570) | | 8082A | | 1 | 05/28/14 21:25 | | CE42917 |
| Aroclor 1242 | ND (0.0570) | | 8082A | | 1 | 05/28/14 21:25 | | CE42917 |
| Aroclor 1248 | ND (0.0570) | | 8082A | | 1 | 05/28/14 21:25 | | CE42917 |
| Aroclor 1254 | ND (0.0570) | | 8082A | | 1 | 05/28/14 21:25 | | CE42917 |
| Aroclor 1260 | ND (0.0570) | | 8082A | | 1 | 05/28/14 21:25 | | CE42917 |
| Aroclor 1262 | ND (0.0570) | | 8082A | | 1 | 05/28/14 21:25 | | CE42917 |
| Aroclor 1268 | ND (0.0570) | | 8082A | | 1 | 05/28/14 21:25 | | CE42917 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: Decachlorobiphenyl</i> | <i>82 %</i> | | <i>30-150</i> |
| <i>Surrogate: Decachlorobiphenyl [2C]</i> | <i>73 %</i> | | <i>30-150</i> |
| <i>Surrogate: Tetrachloro-m-xylene</i> | <i>73 %</i> | | <i>30-150</i> |
| <i>Surrogate: Tetrachloro-m-xylene [2C]</i> | <i>84 %</i> | | <i>30-150</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90
Initial Volume: 19.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/21/14 17:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 1090 (42.7) | | 8100M | | 1 | 05/24/14 22:43 | CXE0356 | CE42107 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>111 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90
Initial Volume: 14.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1-Biphenyl | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 1,2,4-Trichlorobenzene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 1,2-Dichlorobenzene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 1,3-Dichlorobenzene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 1,4-Dichlorobenzene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2,3,4,6-Tetrachlorophenol | ND (1.93) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2,4,5-Trichlorophenol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2,4,6-Trichlorophenol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2,4-Dichlorophenol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2,4-Dimethylphenol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2,4-Dinitrophenol | ND (1.93) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2,4-Dinitrotoluene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2,6-Dinitrotoluene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2-Chloronaphthalene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2-Chlorophenol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2-Methylnaphthalene | 0.516 (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2-Methylphenol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2-Nitroaniline | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 2-Nitrophenol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 3,3'-Dichlorobenzidine | ND (0.772) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 3+4-Methylphenol | ND (0.772) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 3-Nitroaniline | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 4,6-Dinitro-2-Methylphenol | ND (1.93) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 4-Bromophenyl-phenylether | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 4-Chloro-3-Methylphenol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 4-Chloroaniline | ND (0.772) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 4-Chloro-phenyl-phenyl ether | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 4-Nitroaniline | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| 4-Nitrophenol | ND (1.93) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Acenaphthene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Acenaphthylene | 1.10 (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Acetophenone | ND (0.772) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90
Initial Volume: 14.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aniline | ND (0.772) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Anthracene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Azobenzene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Benzo(a)anthracene | 0.558 (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Benzo(a)pyrene | 0.261 (0.193) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Benzo(b)fluoranthene | 1.63 (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Benzo(g,h,i)perylene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Benzo(k)fluoranthene | 0.638 (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Benzoic Acid | ND (1.93) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Benzyl Alcohol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| bis(2-Chloroethoxy)methane | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| bis(2-Chloroethyl)ether | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| bis(2-chloroisopropyl)Ether | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| bis(2-Ethylhexyl)phthalate | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Butylbenzylphthalate | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Carbazole | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Chrysene | 1.05 (0.193) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Dibenzo(a,h)Anthracene | ND (0.193) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Dibenzofuran | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Diethylphthalate | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Dimethylphthalate | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Di-n-butylphthalate | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Di-n-octylphthalate | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Fluoranthene | 0.600 (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Fluorene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Hexachlorobenzene | ND (0.193) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Hexachlorobutadiene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Hexachlorocyclopentadiene | ND (1.93) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Hexachloroethane | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Indeno(1,2,3-cd)Pyrene | 0.433 (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Isophorone | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Naphthalene | 1.55 (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90
Initial Volume: 14.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Nitrobenzene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| N-Nitrosodimethylamine | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| N-Nitroso-Di-n-Propylamine | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| N-nitrosodiphenylamine | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Pentachlorophenol | ND (1.93) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Phenanthrene | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Phenol | ND (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Pyrene | 0.617 (0.386) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |
| Pyridine | ND (1.93) | | 8270D | | 1 | 05/22/14 11:47 | CXE0321 | CE42011 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | <i>79 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2,4,6-Tribromophenol</i> | <i>114 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Chlorophenol-d4</i> | <i>87 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Fluorobiphenyl</i> | <i>94 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Fluorophenol</i> | <i>73 %</i> | | <i>30-130</i> |
| <i>Surrogate: Nitrobenzene-d5</i> | <i>84 %</i> | | <i>30-130</i> |
| <i>Surrogate: Phenol-d6</i> | <i>87 %</i> | | <i>30-130</i> |
| <i>Surrogate: p-Terphenyl-d14</i> | <i>100 %</i> | | <i>30-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|------------------------------|---------------------------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Corrosivity (pH) | 3.92 (N/A) | | 9045 | | 1 | MJV | 05/21/14 17:53 | S.U. | CE42149 |
| Corrosivity (pH) Sample Temp | Soil pH measured in water at 22.7 °C. | | | | | | | | |
| Reactive Cyanide | ND (2.0) | | 7.3.3.2 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |
| Reactive Sulfide | ND (2.0) | | 7.3.4.1 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-322s S-2
Date Sampled: 05/20/14 14:55
Percent Solids: 90
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-02
Sample Matrix: Soil
Units: °C
Analyst: KJK
Prepared: 5/23/14 17:05

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 5/23/14 17:05

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | ND (0.050) | | 1311/6010B | | 1 | KJK | 05/28/14 0:25 | 50 | 50 | CE42402 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|-----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Arsenic | 12.6 (2.2) | | 6010B | | 1 | JP | 05/28/14 9:48 | 2.46 | 100 | CE42308 |
| Barium | 18.6 (2.2) | | 6010B | | 1 | JP | 05/28/14 9:48 | 2.46 | 100 | CE42308 |
| Cadmium | ND (0.45) | | 6010B | | 1 | JP | 05/28/14 9:48 | 2.46 | 100 | CE42308 |
| Chromium | 13.6 (0.9) | | 6010B | | 1 | JP | 05/28/14 9:48 | 2.46 | 100 | CE42308 |
| Lead | 8.6 (4.5) | | 6010B | | 1 | JP | 05/28/14 9:48 | 2.46 | 100 | CE42308 |
| Mercury | ND (0.033) | | 7471A | | 1 | KJK | 05/23/14 16:56 | 0.66 | 40 | CE42310 |
| Selenium | ND (13.4) | | 6010B | | 3 | KJK | 05/29/14 14:19 | 2.46 | 100 | CE42308 |
| Silver | 0.62 (0.45) | | 6010B | | 1 | JP | 05/28/14 9:48 | 2.46 | 100 | CE42308 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91
Initial Volume: 26.3
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0722) | 0.0063 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,1,1-Trichloroethane | ND (0.0361) | 0.0064 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,1,2,2-Tetrachloroethane | ND (0.0361) | 0.0098 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,1,2-Trichloroethane | ND (0.0361) | 0.0090 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,1-Dichloroethane | ND (0.0361) | 0.0058 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,1-Dichloroethene | ND (0.0361) | 0.0089 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,1-Dichloropropene | ND (0.0361) | 0.0056 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,2,3-Trichlorobenzene | ND (0.0361) | 0.0121 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,2,3-Trichloropropane | ND (0.0361) | 0.0090 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,2,4-Trichlorobenzene | ND (0.0361) | 0.0079 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,2,4-Trimethylbenzene | ND (0.0361) | 0.0069 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,2-Dibromo-3-Chloropropane | ND (0.217) | 0.0722 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,2-Dibromoethane | ND (0.0361) | 0.0092 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,2-Dichlorobenzene | ND (0.0361) | 0.0051 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,2-Dichloroethane | ND (0.0361) | 0.0097 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,2-Dichloropropane | ND (0.0361) | 0.0095 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,3,5-Trimethylbenzene | ND (0.0361) | 0.0064 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,3-Dichlorobenzene | ND (0.0361) | 0.0045 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,3-Dichloropropane | ND (0.0361) | 0.0081 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,4-Dichlorobenzene | ND (0.0361) | 0.0096 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1,4-Dioxane - Screen | ND (3.61) | 1.21 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 1-Chlorohexane | ND (0.0361) | 0.0069 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 2,2-Dichloropropane | ND (0.0722) | 0.0123 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 2-Butanone | ND (0.902) | 0.209 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 2-Chlorotoluene | ND (0.0361) | 0.0102 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 2-Hexanone | ND (0.361) | 0.0621 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 4-Chlorotoluene | ND (0.0361) | 0.0047 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 4-Isopropyltoluene | ND (0.0361) | 0.0064 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| 4-Methyl-2-Pentanone | ND (0.361) | 0.0435 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Acetone | ND (0.902) | 0.267 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Benzene | ND (0.0361) | 0.0058 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Bromobenzene | ND (0.0361) | 0.0099 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91
Initial Volume: 26.3
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0361) | 0.0117 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Bromodichloromethane | ND (0.0361) | 0.0050 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Bromoform | ND (0.0361) | 0.0104 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Bromomethane | ND (0.0722) | 0.0241 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Carbon Disulfide | ND (0.0361) | 0.0053 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Carbon Tetrachloride | ND (0.0361) | 0.0063 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Chlorobenzene | ND (0.0361) | 0.0057 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Chloroethane | ND (0.0722) | 0.0240 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Chloroform | B, J 0.0130 (0.0361) | 0.0074 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Chloromethane | ND (0.0722) | 0.0092 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| cis-1,2-Dichloroethene | ND (0.0361) | 0.0090 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| cis-1,3-Dichloropropene | ND (0.0361) | 0.0082 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Dibromochloromethane | ND (0.0361) | 0.0091 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Dibromomethane | ND (0.0361) | 0.0114 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Dichlorodifluoromethane | ND (0.0361) | 0.0063 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Diethyl Ether | ND (0.0361) | 0.0092 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Di-isopropyl ether | ND (0.0361) | 0.0068 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Ethyl tertiary-butyl ether | ND (0.0361) | 0.0091 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Ethylbenzene | ND (0.0361) | 0.0047 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Hexachlorobutadiene | ND (0.0361) | 0.0121 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Isopropylbenzene | ND (0.0361) | 0.0064 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Methyl tert-Butyl Ether | ND (0.0361) | 0.0058 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Methylene Chloride | ND (0.180) | 0.0095 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Naphthalene | ND (0.0361) | 0.0095 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| n-Butylbenzene | ND (0.0361) | 0.0089 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| n-Propylbenzene | ND (0.0361) | 0.0088 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| sec-Butylbenzene | ND (0.0361) | 0.0048 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Styrene | ND (0.0361) | 0.0048 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| tert-Butylbenzene | ND (0.0361) | 0.0084 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Tertiary-amyl methyl ether | ND (0.0361) | 0.0052 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Tetrachloroethene | ND (0.0361) | 0.0121 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Tetrahydrofuran | ND (0.361) | 0.0931 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91
Initial Volume: 26.3
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0361) | 0.0092 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| trans-1,2-Dichloroethene | ND (0.0361) | 0.0118 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| trans-1,3-Dichloropropene | ND (0.0361) | 0.0111 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Trichloroethene | ND (0.0361) | 0.0074 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Trichlorofluoromethane | ND (0.0361) | 0.0095 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Vinyl Acetate | ND (0.180) | 0.0074 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Vinyl Chloride | ND (0.0361) | 0.0119 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Xylene O | ND (0.0361) | 0.0069 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Xylene P,M | ND (0.0722) | 0.0140 | 8260B | | 1 | 05/24/14 0:12 | CXE0358 | CE42715 |
| Xylenes (Total) | ND (0.0722) | | 8260B | | 1 | 05/24/14 0:12 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>104 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>108 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>107 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>110 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91
Initial Volume: 20
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TAJ
Prepared: 5/21/14 18:20

8082 Polychlorinated Biphenyls (PCB)

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aroclor 1016 | ND (0.0548) | | 8082A | | 1 | 05/23/14 19:04 | | CE42106 |
| Aroclor 1221 | ND (0.0548) | | 8082A | | 1 | 05/23/14 19:04 | | CE42106 |
| Aroclor 1232 | ND (0.0548) | | 8082A | | 1 | 05/23/14 19:04 | | CE42106 |
| Aroclor 1242 | ND (0.0548) | | 8082A | | 1 | 05/23/14 19:04 | | CE42106 |
| Aroclor 1248 | ND (0.0548) | | 8082A | | 1 | 05/23/14 19:04 | | CE42106 |
| Aroclor 1254 | ND (0.0548) | | 8082A | | 1 | 05/23/14 19:04 | | CE42106 |
| Aroclor 1260 | ND (0.0548) | | 8082A | | 1 | 05/23/14 19:04 | | CE42106 |
| Aroclor 1262 | ND (0.0548) | | 8082A | | 1 | 05/23/14 19:04 | | CE42106 |
| Aroclor 1268 | ND (0.0548) | | 8082A | | 1 | 05/23/14 19:04 | | CE42106 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: Decachlorobiphenyl</i> | <i>87 %</i> | | <i>30-150</i> |
| <i>Surrogate: Decachlorobiphenyl [2C]</i> | <i>78 %</i> | | <i>30-150</i> |
| <i>Surrogate: Tetrachloro-m-xylene</i> | <i>92 %</i> | | <i>30-150</i> |
| <i>Surrogate: Tetrachloro-m-xylene [2C]</i> | <i>93 %</i> | | <i>30-150</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91
Initial Volume: 19.3
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/21/14 17:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | ND (42.6) | | 8100M | | 1 | 05/27/14 18:23 | CXE0364 | CE42107 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 76 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91
Initial Volume: 14.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1-Biphenyl | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 1,2,4-Trichlorobenzene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 1,2-Dichlorobenzene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 1,3-Dichlorobenzene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 1,4-Dichlorobenzene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2,3,4,6-Tetrachlorophenol | ND (1.89) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2,4,5-Trichlorophenol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2,4,6-Trichlorophenol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2,4-Dichlorophenol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2,4-Dimethylphenol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2,4-Dinitrophenol | ND (1.89) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2,4-Dinitrotoluene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2,6-Dinitrotoluene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2-Chloronaphthalene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2-Chlorophenol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2-Methylnaphthalene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2-Methylphenol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2-Nitroaniline | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 2-Nitrophenol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 3,3'-Dichlorobenzidine | ND (0.757) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 3+4-Methylphenol | ND (0.757) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 3-Nitroaniline | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 4,6-Dinitro-2-Methylphenol | ND (1.89) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 4-Bromophenyl-phenylether | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 4-Chloro-3-Methylphenol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 4-Chloroaniline | ND (0.757) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 4-Chloro-phenyl-phenyl ether | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 4-Nitroaniline | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| 4-Nitrophenol | ND (1.89) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Acenaphthene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Acenaphthylene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Acetophenone | ND (0.757) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91
Initial Volume: 14.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aniline | ND (0.757) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Anthracene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Azobenzene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Benzo(a)anthracene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Benzo(a)pyrene | ND (0.189) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Benzo(b)fluoranthene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Benzo(g,h,i)perylene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Benzo(k)fluoranthene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Benzoic Acid | ND (1.89) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Benzyl Alcohol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| bis(2-Chloroethoxy)methane | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| bis(2-Chloroethyl)ether | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| bis(2-chloroisopropyl)Ether | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| bis(2-Ethylhexyl)phthalate | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Butylbenzylphthalate | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Carbazole | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Chrysene | ND (0.189) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Dibenzo(a,h)Anthracene | ND (0.189) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Dibenzofuran | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Diethylphthalate | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Dimethylphthalate | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Di-n-butylphthalate | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Di-n-octylphthalate | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Fluoranthene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Fluorene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Hexachlorobenzene | ND (0.189) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Hexachlorobutadiene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Hexachlorocyclopentadiene | ND (1.89) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Hexachloroethane | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Indeno(1,2,3-cd)Pyrene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Isophorone | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Naphthalene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91
Initial Volume: 14.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Nitrobenzene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| N-Nitrosodimethylamine | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| N-Nitroso-Di-n-Propylamine | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| N-nitrosodiphenylamine | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Pentachlorophenol | ND (1.89) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Phenanthrene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Phenol | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Pyrene | ND (0.378) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |
| Pyridine | ND (1.89) | | 8270D | | 1 | 05/22/14 12:22 | CXE0321 | CE42011 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | <i>63 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2,4,6-Tribromophenol</i> | <i>120 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Chlorophenol-d4</i> | <i>62 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Fluorobiphenyl</i> | <i>78 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Fluorophenol</i> | <i>50 %</i> | | <i>30-130</i> |
| <i>Surrogate: Nitrobenzene-d5</i> | <i>62 %</i> | | <i>30-130</i> |
| <i>Surrogate: Phenol-d6</i> | <i>64 %</i> | | <i>30-130</i> |
| <i>Surrogate: p-Terphenyl-d14</i> | <i>120 %</i> | | <i>30-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|------------------------------|---------------------------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Corrosivity (pH) | 4.43 (N/A) | | 9045 | | 1 | MJV | 05/21/14 17:53 | S.U. | CE42149 |
| Corrosivity (pH) Sample Temp | Soil pH measured in water at 23.1 °C. | | | | | | | | |
| Reactive Cyanide | ND (2.0) | | 7.3.3.2 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |
| Reactive Sulfide | ND (2.0) | | 7.3.4.1 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-323s S-2
Date Sampled: 05/20/14 10:30
Percent Solids: 91
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-03
Sample Matrix: Soil
Units: °C
Analyst: KJK
Prepared: 5/23/14 17:05

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 5/23/14 17:05

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 0.154 (0.050) | | 1311/6010B | | 1 | KJK | 05/28/14 0:30 | 50 | 50 | CE42402 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Arsenic | 12.0 (2.4) | | 6010B | | 1 | JP | 05/28/14 10:08 | 2.47 | 100 | CE42308 |
| Barium | 32.5 (2.4) | | 6010B | | 1 | JP | 05/28/14 10:08 | 2.47 | 100 | CE42308 |
| Cadmium | ND (0.49) | | 6010B | | 1 | JP | 05/28/14 10:08 | 2.47 | 100 | CE42308 |
| Chromium | 7.2 (1.0) | | 6010B | | 1 | JP | 05/28/14 10:08 | 2.47 | 100 | CE42308 |
| Lead | 87.2 (4.9) | | 6010B | | 1 | JP | 05/28/14 10:08 | 2.47 | 100 | CE42308 |
| Mercury | 0.980 (0.152) | | 7471A | | 4 | KJK | 05/23/14 18:05 | 0.63 | 40 | CE42310 |
| Selenium | ND (4.9) | | 6010B | | 1 | JP | 05/28/14 10:08 | 2.47 | 100 | CE42308 |
| Silver | 0.50 (0.49) | | 6010B | | 1 | JP | 05/28/14 10:08 | 2.47 | 100 | CE42308 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83
Initial Volume: 19.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (1.12) | 0.0977 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,1,1-Trichloroethane | ND (0.561) | 0.0988 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,1,2,2-Tetrachloroethane | ND (0.561) | 0.153 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,1,2-Trichloroethane | ND (0.561) | 0.140 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,1-Dichloroethane | ND (0.561) | 0.0898 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,1-Dichloroethene | ND (0.561) | 0.138 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,1-Dichloropropene | ND (0.561) | 0.0864 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,2,3-Trichlorobenzene | ND (0.561) | 0.187 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,2,3-Trichloropropane | ND (0.561) | 0.139 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,2,4-Trichlorobenzene | ND (0.561) | 0.123 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,2,4-Trimethylbenzene | 7.39 (0.561) | 0.108 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,2-Dibromo-3-Chloropropane | ND (3.37) | 1.12 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,2-Dibromoethane | ND (0.561) | 0.143 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,2-Dichlorobenzene | ND (0.561) | 0.0797 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,2-Dichloroethane | ND (0.561) | 0.150 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,2-Dichloropropane | ND (0.561) | 0.147 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,3,5-Trimethylbenzene | 3.19 (0.561) | 0.0988 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,3-Dichlorobenzene | ND (0.561) | 0.0707 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,3-Dichloropropane | ND (0.561) | 0.126 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,4-Dichlorobenzene | ND (0.561) | 0.149 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1,4-Dioxane - Screen | ND (56.1) | 18.7 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 1-Chlorohexane | ND (0.561) | 0.107 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 2,2-Dichloropropane | ND (1.12) | 0.192 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 2-Butanone | ND (14.0) | 3.24 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 2-Chlorotoluene | ND (0.561) | 0.158 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 2-Hexanone | ND (5.61) | 0.967 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 4-Chlorotoluene | ND (0.561) | 0.0730 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 4-Isopropyltoluene | ND (0.561) | 0.0999 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| 4-Methyl-2-Pentanone | ND (5.61) | 0.676 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Acetone | ND (14.0) | 4.15 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Benzene | J 0.146 (0.561) | 0.0909 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Bromobenzene | ND (0.561) | 0.154 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83
Initial Volume: 19.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.561) | 0.182 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Bromodichloromethane | ND (0.561) | 0.0775 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Bromoform | ND (0.561) | 0.162 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Bromomethane | ND (1.12) | 0.375 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Carbon Disulfide | ND (0.561) | 0.0831 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Carbon Tetrachloride | ND (0.561) | 0.0977 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Chlorobenzene | ND (0.561) | 0.0887 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Chloroethane | ND (1.12) | 0.374 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Chloroform | ND (0.561) | 0.116 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Chloromethane | ND (1.12) | 0.143 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| cis-1,2-Dichloroethene | ND (0.561) | 0.139 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| cis-1,3-Dichloropropene | ND (0.561) | 0.127 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Dibromochloromethane | ND (0.561) | 0.141 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Dibromomethane | ND (0.561) | 0.177 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Dichlorodifluoromethane | ND (0.561) | 0.0977 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Diethyl Ether | ND (0.561) | 0.143 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Di-isopropyl ether | ND (0.561) | 0.106 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Ethyl tertiary-butyl ether | ND (0.561) | 0.141 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Ethylbenzene | 4.00 (0.561) | 0.0730 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Hexachlorobutadiene | ND (0.561) | 0.187 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Isopropylbenzene | J 0.213 (0.561) | 0.0988 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Methyl tert-Butyl Ether | ND (0.561) | 0.0898 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Methylene Chloride | ND (2.81) | 0.147 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Naphthalene | 56.2 (0.561) | 0.147 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| n-Butylbenzene | J 0.269 (0.561) | 0.138 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| n-Propylbenzene | 0.752 (0.561) | 0.137 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| sec-Butylbenzene | ND (0.561) | 0.0752 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Styrene | ND (0.561) | 0.0741 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| tert-Butylbenzene | ND (0.561) | 0.131 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Tertiary-amyl methyl ether | ND (0.561) | 0.0808 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Tetrachloroethene | ND (0.561) | 0.187 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Tetrahydrofuran | ND (5.61) | 1.45 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-324 S-2
 Date Sampled: 05/20/14 14:05
 Percent Solids: 83
 Initial Volume: 19.8
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405486
 ESS Laboratory Sample ID: 1405486-04
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | J 0.146 (0.561) | 0.143 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| trans-1,2-Dichloroethene | ND (0.561) | 0.184 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| trans-1,3-Dichloropropene | ND (0.561) | 0.173 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Trichloroethene | ND (0.561) | 0.116 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Trichlorofluoromethane | ND (0.561) | 0.148 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Vinyl Acetate | ND (2.81) | 0.116 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Vinyl Chloride | ND (0.561) | 0.185 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Xylene O | 0.898 (0.561) | 0.108 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Xylene P,M | 17.0 (1.12) | 0.218 | 8260B | | 10 | 05/24/14 1:36 | CXE0358 | CE42715 |
| Xylenes (Total) | 17.9 (1.12) | | 8260B | | 10 | 05/24/14 1:36 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 99 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 106 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 104 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 105 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-324 S-2
 Date Sampled: 05/20/14 14:05
 Percent Solids: 83
 Initial Volume: 19.7
 Final Volume: 10
 Extraction Method: 3540C

ESS Laboratory Work Order: 1405486
 ESS Laboratory Sample ID: 1405486-04
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: JXS
 Prepared: 5/21/14 18:20

8082 Polychlorinated Biphenyls (PCB)

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aroclor 1016 | ND (0.0613) | | 8082A | | 1 | 05/28/14 21:44 | | CE42917 |
| Aroclor 1221 | ND (0.0613) | | 8082A | | 1 | 05/28/14 21:44 | | CE42917 |
| Aroclor 1232 | ND (0.0613) | | 8082A | | 1 | 05/28/14 21:44 | | CE42917 |
| Aroclor 1242 | ND (0.0613) | | 8082A | | 1 | 05/28/14 21:44 | | CE42917 |
| Aroclor 1248 | ND (0.0613) | | 8082A | | 1 | 05/28/14 21:44 | | CE42917 |
| Aroclor 1254 | ND (0.0613) | | 8082A | | 1 | 05/28/14 21:44 | | CE42917 |
| Aroclor 1260 | ND (0.0613) | | 8082A | | 1 | 05/28/14 21:44 | | CE42917 |
| Aroclor 1262 | ND (0.0613) | | 8082A | | 1 | 05/28/14 21:44 | | CE42917 |
| Aroclor 1268 | ND (0.0613) | | 8082A | | 1 | 05/28/14 21:44 | | CE42917 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: Decachlorobiphenyl</i> | <i>47 %</i> | | <i>30-150</i> |
| <i>Surrogate: Decachlorobiphenyl [2C]</i> | <i>42 %</i> | | <i>30-150</i> |
| <i>Surrogate: Tetrachloro-m-xylene</i> | <i>48 %</i> | | <i>30-150</i> |
| <i>Surrogate: Tetrachloro-m-xylene [2C]</i> | <i>56 %</i> | | <i>30-150</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83
Initial Volume: 19.3
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/21/14 17:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 4930 (46.9) | | 8100M | | 1 | 05/24/14 21:26 | CXE0356 | CE42107 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>116 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1-Biphenyl | 0.565 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 1,2,4-Trichlorobenzene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 1,2-Dichlorobenzene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 1,3-Dichlorobenzene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 1,4-Dichlorobenzene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2,3,4,6-Tetrachlorophenol | ND (2.06) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2,4,5-Trichlorophenol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2,4,6-Trichlorophenol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2,4-Dichlorophenol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2,4-Dimethylphenol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2,4-Dinitrophenol | ND (2.06) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2,4-Dinitrotoluene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2,6-Dinitrotoluene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2-Chloronaphthalene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2-Chlorophenol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2-Methylnaphthalene | 8.33 (4.10) | | 8270D | | 10 | 05/22/14 15:52 | CXE0321 | CE42011 |
| 2-Methylphenol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2-Nitroaniline | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 2-Nitrophenol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 3,3'-Dichlorobenzidine | ND (0.822) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 3+4-Methylphenol | ND (0.822) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 3-Nitroaniline | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 4,6-Dinitro-2-Methylphenol | ND (2.06) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 4-Bromophenyl-phenylether | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 4-Chloro-3-Methylphenol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 4-Chloroaniline | ND (0.822) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 4-Chloro-phenyl-phenyl ether | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 4-Nitroaniline | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| 4-Nitrophenol | ND (2.06) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Acenaphthene | 0.447 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Acenaphthylene | 2.63 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Acetophenone | ND (0.822) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aniline | ND (0.822) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Anthracene | 0.965 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Azobenzene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Benzo(a)anthracene | 1.94 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Benzo(a)pyrene | 1.00 (0.206) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Benzo(b)fluoranthene | 3.35 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Benzo(g,h,i)perylene | 0.425 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Benzo(k)fluoranthene | 1.02 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Benzoic Acid | ND (2.06) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Benzyl Alcohol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| bis(2-Chloroethoxy)methane | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| bis(2-Chloroethyl)ether | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| bis(2-chloroisopropyl)Ether | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| bis(2-Ethylhexyl)phthalate | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Butylbenzylphthalate | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Carbazole | 0.518 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Chrysene | 2.88 (0.206) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Dibenzo(a,h)Anthracene | 0.244 (0.206) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Dibenzofuran | 0.528 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Diethylphthalate | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Dimethylphthalate | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Di-n-butylphthalate | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Di-n-octylphthalate | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Fluoranthene | 2.76 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Fluorene | 0.764 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Hexachlorobenzene | ND (0.206) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Hexachlorobutadiene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Hexachlorocyclopentadiene | ND (2.06) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Hexachloroethane | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Indeno(1,2,3-cd)Pyrene | 0.528 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Isophorone | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Naphthalene | 55.7 (4.10) | | 8270D | | 10 | 05/22/14 15:52 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Nitrobenzene | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| N-Nitrosodimethylamine | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| N-Nitroso-Di-n-Propylamine | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| N-nitrosodiphenylamine | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Pentachlorophenol | ND (2.06) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Phenanthrene | 2.50 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Phenol | ND (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Pyrene | 2.23 (0.410) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |
| Pyridine | ND (2.06) | | 8270D | | 1 | 05/22/14 12:57 | CXE0321 | CE42011 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 66 % | | 30-130 |
| <i>Surrogate: 2,4,6-Tribromophenol</i> | 113 % | | 30-130 |
| <i>Surrogate: 2-Chlorophenol-d4</i> | 75 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 77 % | | 30-130 |
| <i>Surrogate: 2-Fluorophenol</i> | 63 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 67 % | | 30-130 |
| <i>Surrogate: Phenol-d6</i> | 72 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 75 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|------------------------------|---------------------------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Corrosivity (pH) | 2.82 (N/A) | | 9045 | | 1 | MJV | 05/21/14 17:53 | S.U. | CE42149 |
| Corrosivity (pH) Sample Temp | Soil pH measured in water at 22.5 °C. | | | | | | | | |
| Reactive Cyanide | ND (2.0) | | 7.3.3.2 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |
| Reactive Sulfide | ND (2.0) | | 7.3.4.1 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-324 S-2
Date Sampled: 05/20/14 14:05
Percent Solids: 83
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-04
Sample Matrix: Soil
Units: °C
Analyst: KJK
Prepared: 5/23/14 17:05

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 5/23/14 17:05

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 0.374 (0.050) | | 1311/6010B | | 1 | KJK | 05/28/14 0:34 | 50 | 50 | CE42402 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Arsenic | 13.0 (2.9) | | 6010B | | 1 | JP | 05/28/14 10:12 | 2.38 | 100 | CE42308 |
| Barium | 43.7 (2.9) | | 6010B | | 1 | JP | 05/28/14 10:12 | 2.38 | 100 | CE42308 |
| Cadmium | ND (0.59) | | 6010B | | 1 | JP | 05/28/14 10:12 | 2.38 | 100 | CE42308 |
| Chromium | 6.9 (1.2) | | 6010B | | 1 | JP | 05/28/14 10:12 | 2.38 | 100 | CE42308 |
| Lead | 131 (5.9) | | 6010B | | 1 | JP | 05/28/14 10:12 | 2.38 | 100 | CE42308 |
| Mercury | 2.03 (0.446) | | 7471A | | 10 | KJK | 05/23/14 18:08 | 0.62 | 40 | CE42310 |
| Selenium | ND (5.9) | | 6010B | | 1 | JP | 05/28/14 10:12 | 2.38 | 100 | CE42308 |
| Silver | ND (0.59) | | 6010B | | 1 | JP | 05/28/14 10:12 | 2.38 | 100 | CE42308 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72
Initial Volume: 17.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.162) | 0.0141 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,1,1-Trichloroethane | ND (0.0809) | 0.0142 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,1,2,2-Tetrachloroethane | ND (0.0809) | 0.0220 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,1,2-Trichloroethane | ND (0.0809) | 0.0202 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,1-Dichloroethane | ND (0.0809) | 0.0129 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,1-Dichloroethene | ND (0.0809) | 0.0199 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,1-Dichloropropene | ND (0.0809) | 0.0125 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,2,3-Trichlorobenzene | ND (0.0809) | 0.0270 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,2,3-Trichloropropane | ND (0.0809) | 0.0201 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,2,4-Trichlorobenzene | ND (0.0809) | 0.0178 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,2,4-Trimethylbenzene | 0.440 (0.0809) | 0.0155 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,2-Dibromo-3-Chloropropane | ND (0.485) | 0.162 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,2-Dibromoethane | ND (0.0809) | 0.0205 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,2-Dichlorobenzene | ND (0.0809) | 0.0115 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,2-Dichloroethane | ND (0.0809) | 0.0217 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,2-Dichloropropane | ND (0.0809) | 0.0212 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,3,5-Trimethylbenzene | 0.239 (0.0809) | 0.0142 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,3-Dichlorobenzene | ND (0.0809) | 0.0102 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,3-Dichloropropane | ND (0.0809) | 0.0181 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,4-Dichlorobenzene | ND (0.0809) | 0.0215 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1,4-Dioxane - Screen | ND (8.09) | 2.70 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 1-Chlorohexane | ND (0.0809) | 0.0154 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 2,2-Dichloropropane | ND (0.162) | 0.0277 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 2-Butanone | ND (2.02) | 0.467 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 2-Chlorotoluene | ND (0.0809) | 0.0228 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 2-Hexanone | ND (0.809) | 0.139 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 4-Chlorotoluene | ND (0.0809) | 0.0105 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 4-Isopropyltoluene | ND (0.0809) | 0.0144 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| 4-Methyl-2-Pentanone | ND (0.809) | 0.0974 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Acetone | ND (2.02) | 0.598 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Benzene | J 0.0695 (0.0809) | 0.0131 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Bromobenzene | ND (0.0809) | 0.0222 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72
Initial Volume: 17.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0809) | 0.0262 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Bromodichloromethane | ND (0.0809) | 0.0112 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Bromoform | ND (0.0809) | 0.0233 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Bromomethane | ND (0.162) | 0.0540 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Carbon Disulfide | ND (0.0809) | 0.0120 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Carbon Tetrachloride | ND (0.0809) | 0.0141 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Chlorobenzene | ND (0.0809) | 0.0128 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Chloroethane | ND (0.162) | 0.0539 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Chloroform | B, J 0.0307 (0.0809) | 0.0167 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Chloromethane | ND (0.162) | 0.0205 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| cis-1,2-Dichloroethene | ND (0.0809) | 0.0201 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| cis-1,3-Dichloropropene | ND (0.0809) | 0.0183 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Dibromochloromethane | ND (0.0809) | 0.0204 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Dibromomethane | ND (0.0809) | 0.0256 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Dichlorodifluoromethane | ND (0.0809) | 0.0141 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Diethyl Ether | ND (0.0809) | 0.0205 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Di-isopropyl ether | ND (0.0809) | 0.0152 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Ethyl tertiary-butyl ether | ND (0.0809) | 0.0204 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Ethylbenzene | 0.270 (0.0809) | 0.0105 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Hexachlorobutadiene | ND (0.0809) | 0.0270 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Isopropylbenzene | ND (0.0809) | 0.0142 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Methyl tert-Butyl Ether | ND (0.0809) | 0.0129 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Methylene Chloride | ND (0.404) | 0.0212 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Naphthalene | 3.65 (0.0809) | 0.0212 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| n-Butylbenzene | ND (0.0809) | 0.0199 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| n-Propylbenzene | ND (0.0809) | 0.0197 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| sec-Butylbenzene | ND (0.0809) | 0.0108 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Styrene | 0.146 (0.0809) | 0.0107 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| tert-Butylbenzene | ND (0.0809) | 0.0189 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Tertiary-amyl methyl ether | ND (0.0809) | 0.0116 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Tetrachloroethene | ND (0.0809) | 0.0270 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Tetrahydrofuran | ND (0.809) | 0.209 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: BD-052014
 Date Sampled: 05/20/14 08:00
 Percent Solids: 72
 Initial Volume: 17.2
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405486
 ESS Laboratory Sample ID: 1405486-05
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|-----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.176 (0.0809) | 0.0205 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| trans-1,2-Dichloroethene | ND (0.0809) | 0.0265 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| trans-1,3-Dichloropropene | ND (0.0809) | 0.0249 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Trichloroethene | ND (0.0809) | 0.0167 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Trichlorofluoromethane | ND (0.0809) | 0.0213 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Vinyl Acetate | ND (0.404) | 0.0167 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Vinyl Chloride | ND (0.0809) | 0.0267 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Xylene O | 0.184 (0.0809) | 0.0155 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Xylene P,M | 1.09 (0.162) | 0.0314 | 8260B | | 1 | 05/27/14 15:53 | CXE0362 | CE42730 |
| Xylenes (Total) | 1.27 (0.162) | | 8260B | | 1 | 05/27/14 15:53 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 83 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 90 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 89 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 83 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72
Initial Volume: 19.6
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JXS
Prepared: 5/21/14 18:20

8082 Polychlorinated Biphenyls (PCB)

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------|-----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aroclor 1016 | ND (0.0713) | | 8082A | | 1 | 05/28/14 22:03 | | CE42917 |
| Aroclor 1221 | ND (0.0713) | | 8082A | | 1 | 05/28/14 22:03 | | CE42917 |
| Aroclor 1232 | ND (0.0713) | | 8082A | | 1 | 05/28/14 22:03 | | CE42917 |
| Aroclor 1242 | ND (0.0713) | | 8082A | | 1 | 05/28/14 22:03 | | CE42917 |
| Aroclor 1248 | ND (0.0713) | | 8082A | | 1 | 05/28/14 22:03 | | CE42917 |
| Aroclor 1254 | 0.105 (0.0713) | | 8082A | | 1 | 05/28/14 22:03 | | CE42917 |
| Aroclor 1260 | ND (0.0713) | | 8082A | | 1 | 05/28/14 22:03 | | CE42917 |
| Aroclor 1262 | ND (0.0713) | | 8082A | | 1 | 05/28/14 22:03 | | CE42917 |
| Aroclor 1268 | ND (0.0713) | | 8082A | | 1 | 05/28/14 22:03 | | CE42917 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: Decachlorobiphenyl</i> | 58 % | | 30-150 |
| <i>Surrogate: Decachlorobiphenyl [2C]</i> | 52 % | | 30-150 |
| <i>Surrogate: Tetrachloro-m-xylene</i> | 53 % | | 30-150 |
| <i>Surrogate: Tetrachloro-m-xylene [2C]</i> | 63 % | | 30-150 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72
Initial Volume: 19.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/21/14 17:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 4520 (53.8) | | 8100M | | 1 | 05/24/14 22:05 | CXE0356 | CE42107 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 54 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72
Initial Volume: 14.3
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1-Biphenyl | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 1,2,4-Trichlorobenzene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 1,2-Dichlorobenzene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 1,3-Dichlorobenzene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 1,4-Dichlorobenzene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2,3,4,6-Tetrachlorophenol | ND (2.45) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2,4,5-Trichlorophenol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2,4,6-Trichlorophenol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2,4-Dichlorophenol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2,4-Dimethylphenol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2,4-Dinitrophenol | ND (2.45) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2,4-Dinitrotoluene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2,6-Dinitrotoluene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2-Chloronaphthalene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2-Chlorophenol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2-Methylnaphthalene | 6.05 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2-Methylphenol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2-Nitroaniline | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 2-Nitrophenol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 3,3'-Dichlorobenzidine | ND (0.978) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 3+4-Methylphenol | ND (0.978) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 3-Nitroaniline | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 4,6-Dinitro-2-Methylphenol | ND (2.45) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 4-Bromophenyl-phenylether | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 4-Chloro-3-Methylphenol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 4-Chloroaniline | ND (0.978) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 4-Chloro-phenyl-phenyl ether | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 4-Nitroaniline | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| 4-Nitrophenol | ND (2.45) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Acenaphthene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Acenaphthylene | 4.17 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Acetophenone | ND (0.978) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72
Initial Volume: 14.3
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Aniline | ND (0.978) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Anthracene | 0.845 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Azobenzene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Benzo(a)anthracene | 2.33 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Benzo(a)pyrene | 0.874 (0.245) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Benzo(b)fluoranthene | 5.34 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Benzo(g,h,i)perylene | 0.600 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Benzo(k)fluoranthene | 2.03 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Benzoic Acid | ND (2.45) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Benzyl Alcohol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| bis(2-Chloroethoxy)methane | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| bis(2-Chloroethyl)ether | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| bis(2-chloroisopropyl)Ether | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| bis(2-Ethylhexyl)phthalate | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Butylbenzylphthalate | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Carbazole | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Chrysene | 4.07 (0.245) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Dibenzo(a,h)Anthracene | 0.354 (0.245) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Dibenzofuran | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Diethylphthalate | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Dimethylphthalate | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Di-n-butylphthalate | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Di-n-octylphthalate | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Fluoranthene | 2.16 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Fluorene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Hexachlorobenzene | ND (0.245) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Hexachlorobutadiene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Hexachlorocyclopentadiene | ND (2.45) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Hexachloroethane | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Indeno(1,2,3-cd)Pyrene | 0.826 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Isophorone | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Naphthalene | 24.4 (4.88) | | 8270D | | 10 | 05/22/14 16:27 | CXE0321 | CE42011 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: BD-052014
 Date Sampled: 05/20/14 08:00
 Percent Solids: 72
 Initial Volume: 14.3
 Final Volume: 0.5
 Extraction Method: 3546

ESS Laboratory Work Order: 1405486
 ESS Laboratory Sample ID: 1405486-05
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: IBM
 Prepared: 5/21/14 17:19

8270C Semi-Volatile Organic Compounds

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Nitrobenzene | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| N-Nitrosodimethylamine | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| N-Nitroso-Di-n-Propylamine | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| N-nitrosodiphenylamine | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Pentachlorophenol | ND (2.45) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Phenanthrene | 0.962 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Phenol | ND (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Pyrene | 2.72 (0.488) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |
| Pyridine | ND (2.45) | | 8270D | | 1 | 05/22/14 13:32 | CXE0321 | CE42011 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 61 % | | 30-130 |
| <i>Surrogate: 2,4,6-Tribromophenol</i> | 100 % | | 30-130 |
| <i>Surrogate: 2-Chlorophenol-d4</i> | 68 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 75 % | | 30-130 |
| <i>Surrogate: 2-Fluorophenol</i> | 58 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 64 % | | 30-130 |
| <i>Surrogate: Phenol-d6</i> | 63 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 78 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|------------------------------|---------------------------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Corrosivity (pH) | 2.35 (N/A) | | 9045 | | 1 | MJV | 05/21/14 17:53 | S.U. | CE42149 |
| Corrosivity (pH) Sample Temp | Soil pH measured in water at 23.5 °C. | | | | | | | | |
| Reactive Cyanide | ND (2.0) | | 7.3.3.2 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |
| Reactive Sulfide | ND (2.0) | | 7.3.4.1 | | 1 | MJV | 05/23/14 11:20 | mg/kg | CE42329 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052014
Date Sampled: 05/20/14 08:00
Percent Solids: 72
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-05
Sample Matrix: Soil
Units: °C
Analyst: KJK
Prepared: 5/23/14 17:05

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | KJK | 05/24/14 10:30 | CE42340 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank 52014
Date Sampled: 05/20/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-06
Sample Matrix: Solid
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.100) | 0.0087 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,1,1-Trichloroethane | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,1,2,2-Tetrachloroethane | ND (0.0500) | 0.0136 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,1,2-Trichloroethane | ND (0.0500) | 0.0125 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,1-Dichloroethane | ND (0.0500) | 0.0080 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,1-Dichloroethene | ND (0.0500) | 0.0123 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,1-Dichloropropene | ND (0.0500) | 0.0077 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,2,3-Trichlorobenzene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,2,3-Trichloropropane | ND (0.0500) | 0.0124 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,2,4-Trichlorobenzene | ND (0.0500) | 0.0110 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,2,4-Trimethylbenzene | ND (0.0500) | 0.0096 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,2-Dibromo-3-Chloropropane | ND (0.300) | 0.100 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,2-Dibromoethane | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,2-Dichlorobenzene | ND (0.0500) | 0.0071 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,2-Dichloroethane | ND (0.0500) | 0.0134 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,2-Dichloropropane | ND (0.0500) | 0.0131 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,3,5-Trimethylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,3-Dichlorobenzene | ND (0.0500) | 0.0063 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,3-Dichloropropane | ND (0.0500) | 0.0112 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,4-Dichlorobenzene | ND (0.0500) | 0.0133 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1,4-Dioxane - Screen | ND (5.00) | 1.67 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 1-Chlorohexane | ND (0.0500) | 0.0095 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 2,2-Dichloropropane | ND (0.100) | 0.0171 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 2-Butanone | ND (1.25) | 0.289 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 2-Chlorotoluene | ND (0.0500) | 0.0141 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 2-Hexanone | ND (0.500) | 0.0861 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 4-Chlorotoluene | ND (0.0500) | 0.0065 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 4-Isopropyltoluene | ND (0.0500) | 0.0089 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| 4-Methyl-2-Pentanone | ND (0.500) | 0.0602 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Acetone | ND (1.25) | 0.370 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Benzene | ND (0.0500) | 0.0081 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Bromobenzene | ND (0.0500) | 0.0137 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank 52014
Date Sampled: 05/20/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-06
Sample Matrix: Solid
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0500) | 0.0162 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Bromodichloromethane | ND (0.0500) | 0.0069 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Bromoform | ND (0.0500) | 0.0144 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Bromomethane | ND (0.100) | 0.0334 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Carbon Disulfide | ND (0.0500) | 0.0074 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Carbon Tetrachloride | ND (0.0500) | 0.0087 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Chlorobenzene | ND (0.0500) | 0.0079 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Chloroethane | ND (0.100) | 0.0333 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Chloroform | B, J 0.0160 (0.0500) | 0.0103 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Chloromethane | ND (0.100) | 0.0127 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| cis-1,2-Dichloroethene | ND (0.0500) | 0.0124 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| cis-1,3-Dichloropropene | ND (0.0500) | 0.0113 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Dibromochloromethane | ND (0.0500) | 0.0126 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Dibromomethane | ND (0.0500) | 0.0158 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Dichlorodifluoromethane | ND (0.0500) | 0.0087 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Diethyl Ether | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Di-isopropyl ether | ND (0.0500) | 0.0094 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Ethyl tertiary-butyl ether | ND (0.0500) | 0.0126 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Ethylbenzene | ND (0.0500) | 0.0065 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Hexachlorobutadiene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Isopropylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Methyl tert-Butyl Ether | ND (0.0500) | 0.0080 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Methylene Chloride | ND (0.250) | 0.0131 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Naphthalene | ND (0.0500) | 0.0131 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| n-Butylbenzene | ND (0.0500) | 0.0123 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| n-Propylbenzene | ND (0.0500) | 0.0122 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| sec-Butylbenzene | ND (0.0500) | 0.0067 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Styrene | ND (0.0500) | 0.0066 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| tert-Butylbenzene | ND (0.0500) | 0.0117 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Tertiary-amyl methyl ether | ND (0.0500) | 0.0072 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Tetrachloroethene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Tetrahydrofuran | ND (0.500) | 0.129 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank 52014
Date Sampled: 05/20/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405486
ESS Laboratory Sample ID: 1405486-06
Sample Matrix: Solid
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| trans-1,2-Dichloroethene | ND (0.0500) | 0.0164 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| trans-1,3-Dichloropropene | ND (0.0500) | 0.0154 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Trichloroethene | ND (0.0500) | 0.0103 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Trichlorofluoromethane | ND (0.0500) | 0.0132 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Vinyl Acetate | ND (0.250) | 0.0103 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Vinyl Chloride | ND (0.0500) | 0.0165 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Xylene O | ND (0.0500) | 0.0096 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Xylene P,M | ND (0.100) | 0.0194 | 8260B | | 1 | 05/23/14 20:55 | CXE0358 | CE42715 |
| Xylenes (Total) | ND (0.100) | | 8260B | | 1 | 05/23/14 20:55 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>90 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>92 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>91 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>92 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

1311 TCLP Metals

Batch CE42402 - 3005A_TCLP

Blank

| | | | | | | | | | | |
|------|----|-------|------|--|--|--|--|--|--|--|
| Lead | ND | 0.050 | mg/L | | | | | | | |
|------|----|-------|------|--|--|--|--|--|--|--|

LCS

| | | | | | | | | | | |
|------|-------|-------|------|--------|--|----|--------|--|--|--|
| Lead | 0.470 | 0.050 | mg/L | 0.5000 | | 94 | 80-120 | | | |
|------|-------|-------|------|--------|--|----|--------|--|--|--|

LCS Dup

| | | | | | | | | | | |
|------|-------|-------|------|--------|--|----|--------|-----|----|--|
| Lead | 0.472 | 0.050 | mg/L | 0.5000 | | 94 | 80-120 | 0.6 | 20 | |
|------|-------|-------|------|--------|--|----|--------|-----|----|--|

Total Metals Solid

Batch CE42308 - 3050B

Blank

| | | | | | | | | | | |
|----------|----|------|-----------|--|--|--|--|--|--|--|
| Arsenic | ND | 2.5 | mg/kg wet | | | | | | | |
| Barium | ND | 2.5 | mg/kg wet | | | | | | | |
| Cadmium | ND | 0.50 | mg/kg wet | | | | | | | |
| Chromium | ND | 1.0 | mg/kg wet | | | | | | | |
| Lead | ND | 5.0 | mg/kg wet | | | | | | | |
| Selenium | ND | 5.0 | mg/kg wet | | | | | | | |
| Silver | ND | 0.50 | mg/kg wet | | | | | | | |

LCS

| | | | | | | | | | | |
|----------|------|------|-----------|-------|--|----|--------|--|--|--|
| Arsenic | 114 | 7.7 | mg/kg wet | 122.0 | | 93 | 80-120 | | | |
| Barium | 145 | 7.7 | mg/kg wet | 167.0 | | 87 | 80-120 | | | |
| Cadmium | 75.3 | 1.55 | mg/kg wet | 88.00 | | 86 | 80-120 | | | |
| Chromium | 86.9 | 3.1 | mg/kg wet | 102.0 | | 85 | 80-120 | | | |
| Lead | 79.8 | 15.4 | mg/kg wet | 94.50 | | 84 | 80-120 | | | |
| Selenium | 131 | 15.4 | mg/kg wet | 157.0 | | 83 | 80-120 | | | |
| Silver | 32.8 | 1.55 | mg/kg wet | 34.20 | | 96 | 80-120 | | | |

LCS Dup

| | | | | | | | | | | |
|----------|------|------|-----------|-------|--|----|--------|------|----|--|
| Arsenic | 113 | 7.8 | mg/kg wet | 122.0 | | 92 | 80-120 | 1 | 20 | |
| Barium | 145 | 7.8 | mg/kg wet | 167.0 | | 87 | 80-120 | 0.04 | 20 | |
| Cadmium | 72.7 | 1.57 | mg/kg wet | 88.00 | | 83 | 80-120 | 3 | 20 | |
| Chromium | 86.0 | 3.1 | mg/kg wet | 102.0 | | 84 | 80-120 | 1 | 20 | |
| Lead | 85.5 | 15.6 | mg/kg wet | 94.50 | | 90 | 80-120 | 7 | 20 | |
| Selenium | 128 | 15.6 | mg/kg wet | 157.0 | | 82 | 80-120 | 2 | 20 | |
| Silver | 31.2 | 1.57 | mg/kg wet | 34.20 | | 91 | 80-120 | 5 | 20 | |

Reference

| | | | | | | | | | | |
|----------|-----|------|-----------|-------|--|----|--------|--|--|----|
| Barium | 460 | 9.8 | mg/kg wet | 500.0 | | 92 | 70-130 | | | |
| Cadmium | 426 | 1.97 | mg/kg wet | 500.0 | | 85 | 70-130 | | | |
| Chromium | 453 | 3.9 | mg/kg wet | 500.0 | | 91 | 70-130 | | | |
| Lead | 452 | 19.6 | mg/kg wet | 500.0 | | 90 | 70-130 | | | |
| Silver | 183 | 1.97 | mg/kg wet | 500.0 | | 37 | 70-130 | | | R- |

Batch CE42310 - 7471A

Blank

| | | | | | | | | | | |
|---------|----|-------|-----------|--|--|--|--|--|--|--|
| Mercury | ND | 0.033 | mg/kg wet | | | | | | | |
|---------|----|-------|-----------|--|--|--|--|--|--|--|

LCS



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42310 - 7471A

| | | | | | | | | | | |
|---------|------|-------|-----------|-------|--|----|--------|--|--|--|
| Mercury | 3.93 | 0.786 | mg/kg wet | 3.980 | | 99 | 80-120 | | | |
|---------|------|-------|-----------|-------|--|----|--------|--|--|--|

LCS Dup

| | | | | | | | | | | |
|---------|------|-------|-----------|-------|--|----|--------|---|----|--|
| Mercury | 3.62 | 0.773 | mg/kg wet | 3.980 | | 91 | 80-120 | 8 | 20 | |
|---------|------|-------|-----------|-------|--|----|--------|---|----|--|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

Blank

| | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|----|--------|--|--|---|
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0170 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.37 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.37 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.41 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.42 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |

LCS

| | | | | | | | | | | |
|---------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.58 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.84 | 0.0500 | mg/kg wet | 2.500 | | 114 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,1-Dichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,1-Dichloroethene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1-Dichloropropene | 2.82 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.56 | 0.300 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dibromoethane | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,2-Dichloroethane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,2-Dichloropropane | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,3-Dichloropropane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,4-Dioxane - Screen | 60.3 | 5.00 | mg/kg wet | 50.00 | | 121 | 44-241 | | | |
| 1-Chlorohexane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 2,2-Dichloropropane | 2.62 | 0.100 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 2-Butanone | 12.3 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| 2-Chlorotoluene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 2-Hexanone | 12.5 | 0.500 | mg/kg wet | 12.50 | | 100 | 70-130 | | | |
| 4-Chlorotoluene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 4-Isopropyltoluene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.9 | 0.500 | mg/kg wet | 12.50 | | 103 | 70-130 | | | |
| Acetone | 12.7 | 1.25 | mg/kg wet | 12.50 | | 102 | 70-130 | | | |
| Benzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Bromobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Bromochloromethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Bromodichloromethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Bromoform | 2.77 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Bromomethane | 2.81 | 0.100 | mg/kg wet | 2.500 | | 113 | 70-130 | | | |
| Carbon Disulfide | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Carbon Tetrachloride | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Chlorobenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Chloroethane | 2.38 | 0.100 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Chloroform | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Chloromethane | 2.42 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.82 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | | | |
| Dibromochloromethane | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Dibromomethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Dichlorodifluoromethane | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Diethyl Ether | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Di-isopropyl ether | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Ethylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Hexachlorobutadiene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Isopropylbenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Methylene Chloride | 2.55 | 0.250 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Naphthalene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| n-Butylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| n-Propylbenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| sec-Butylbenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Styrene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| tert-Butylbenzene | 2.95 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Tetrachloroethene | 1.92 | 0.0500 | mg/kg wet | 2.500 | | 77 | 70-130 | | | |
| Tetrahydrofuran | 2.44 | 0.500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Toluene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Trichloroethene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Vinyl Acetate | 2.94 | 0.250 | mg/kg wet | 2.500 | | 118 | 70-130 | | | |
| Vinyl Chloride | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Xylene O | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Xylene P,M | 5.29 | 0.100 | mg/kg wet | 5.000 | | 106 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.47 | | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.41 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.40 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.54 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|------|----|--|
| 1,1,1,2-Tetrachloroethane | 2.57 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.7 | 25 | |
| 1,1,1-Trichloroethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 4 | 25 | |
| 1,1,2-Trichloroethane | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 5 | 25 | |
| 1,1-Dichloroethane | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| 1,1-Dichloroethene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | 6 | 25 | |
| 1,1-Dichloropropene | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 1 | 25 | |
| 1,2,3-Trichlorobenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| 1,2,3-Trichloropropane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| 1,2,4-Trichlorobenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 2 | 25 | |
| 1,2,4-Trimethylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.57 | 0.300 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.4 | 25 | |
| 1,2-Dibromoethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.2 | 25 | |
| 1,2-Dichlorobenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.04 | 25 | |
| 1,2-Dichloroethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 5 | 25 | |
| 1,2-Dichloropropane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.8 | 25 | |
| 1,3,5-Trimethylbenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.6 | 25 | |
| 1,3-Dichlorobenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.4 | 25 | |
| 1,3-Dichloropropane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.7 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|-----|-----|--|
| 1,4-Dichlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0 | 25 | |
| 1,4-Dioxane - Screen | 57.3 | 5.00 | mg/kg wet | 50.00 | | 115 | 44-241 | 5 | 200 | |
| 1-Chlorohexane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 1 | 25 | |
| 2,2-Dichloropropane | 2.49 | 0.100 | mg/kg wet | 2.500 | | 100 | 70-130 | 5 | 25 | |
| 2-Butanone | 11.9 | 1.25 | mg/kg wet | 12.50 | | 95 | 70-130 | 3 | 25 | |
| 2-Chlorotoluene | 2.81 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | 9 | 25 | |
| 2-Hexanone | 12.4 | 0.500 | mg/kg wet | 12.50 | | 99 | 70-130 | 1 | 25 | |
| 4-Chlorotoluene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.2 | 25 | |
| 4-Isopropyltoluene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.6 | 25 | |
| 4-Methyl-2-Pentanone | 12.7 | 0.500 | mg/kg wet | 12.50 | | 102 | 70-130 | 1 | 25 | |
| Acetone | 12.4 | 1.25 | mg/kg wet | 12.50 | | 100 | 70-130 | 2 | 25 | |
| Benzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 2 | 25 | |
| Bromobenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.6 | 25 | |
| Bromochloromethane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 5 | 25 | |
| Bromodichloromethane | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| Bromoform | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 0.8 | 25 | |
| Bromomethane | 2.72 | 0.100 | mg/kg wet | 2.500 | | 109 | 70-130 | 3 | 25 | |
| Carbon Disulfide | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| Carbon Tetrachloride | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 0.8 | 25 | |
| Chlorobenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.3 | 25 | |
| Chloroethane | 2.32 | 0.100 | mg/kg wet | 2.500 | | 93 | 70-130 | 3 | 25 | |
| Chloroform | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 2 | 25 | |
| Chloromethane | 2.36 | 0.100 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| cis-1,2-Dichloroethene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 2 | 25 | |
| cis-1,3-Dichloropropene | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 1 | 25 | |
| Dibromochloromethane | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 0.6 | 25 | |
| Dibromomethane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| Dichlorodifluoromethane | 2.29 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 2 | 25 | |
| Diethyl Ether | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| Di-isopropyl ether | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| Ethyl tertiary-butyl ether | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| Ethylbenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.3 | 25 | |
| Hexachlorobutadiene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.3 | 25 | |
| Isopropylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.8 | 25 | |
| Methyl tert-Butyl Ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 1 | 25 | |
| Methylene Chloride | 2.49 | 0.250 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| Naphthalene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 2 | 25 | |
| n-Butylbenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 3 | 25 | |
| n-Propylbenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 5 | 25 | |
| sec-Butylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 1 | 25 | |
| Styrene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| tert-Butylbenzene | 2.94 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | 0.3 | 25 | |
| Tertiary-amyl methyl ether | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 3 | 25 | |
| Tetrachloroethene | 1.89 | 0.0500 | mg/kg wet | 2.500 | | 76 | 70-130 | 1 | 25 | |
| Tetrahydrofuran | 2.90 | 0.500 | mg/kg wet | 2.500 | | 116 | 70-130 | 17 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42715 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| Toluene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 2 | 25 | |
| trans-1,2-Dichloroethene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| trans-1,3-Dichloropropene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Trichloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| Vinyl Acetate | 2.85 | 0.250 | mg/kg wet | 2.500 | | 114 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 5 | 25 | |
| Xylene O | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.2 | 25 | |
| Xylene P,M | 5.32 | 0.100 | mg/kg wet | 5.000 | | 106 | 70-130 | 0.6 | 25 | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.44 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.45 | | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.35 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.51 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |

Batch CE42730 - 5035

| Blank | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|----|--------|--|--|---|
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0130 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.18 | | mg/kg wet | 2.500 | | 87 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.19 | | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.22 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

LCS

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.55 | 0.100 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1-Dichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1-Dichloroethene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,1-Dichloropropene | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.57 | 0.300 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,2-Dibromoethane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,2-Dichloroethane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dichloropropane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,3-Dichloropropane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,4-Dioxane - Screen | 59.9 | 5.00 | mg/kg wet | 50.00 | | 120 | 44-241 | | | |
| 1-Chlorohexane | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 2,2-Dichloropropane | 2.65 | 0.100 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 2-Butanone | 12.2 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| 2-Chlorotoluene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 2-Hexanone | 12.3 | 0.500 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| 4-Chlorotoluene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 4-Isopropyltoluene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.4 | 0.500 | mg/kg wet | 12.50 | | 99 | 70-130 | | | |
| Acetone | 12.5 | 1.25 | mg/kg wet | 12.50 | | 100 | 70-130 | | | |
| Benzene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| Bromobenzene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Bromochloromethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromodichloromethane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromoform | 2.81 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| Bromomethane | 2.41 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Carbon Disulfide | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Carbon Tetrachloride | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Chlorobenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Chloroethane | 2.52 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Chloroform | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Chloromethane | 2.30 | 0.100 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Dibromochloromethane | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Dibromomethane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Dichlorodifluoromethane | 1.99 | 0.0500 | mg/kg wet | 2.500 | | 80 | 70-130 | | | |
| Diethyl Ether | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Di-isopropyl ether | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Ethylbenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Hexachlorobutadiene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Isopropylbenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Methylene Chloride | 2.46 | 0.250 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Naphthalene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| n-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| n-Propylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| sec-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Styrene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| tert-Butylbenzene | 2.93 | 0.0500 | mg/kg wet | 2.500 | | 117 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Tetrachloroethene | 1.90 | 0.0500 | mg/kg wet | 2.500 | | 76 | 70-130 | | | |
| Tetrahydrofuran | 2.43 | 0.500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Toluene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Trichloroethene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Vinyl Acetate | 2.87 | 0.250 | mg/kg wet | 2.500 | | 115 | 70-130 | | | |
| Vinyl Chloride | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Xylene O | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Xylene P,M | 5.32 | 0.100 | mg/kg wet | 5.000 | | 106 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.27 | | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.24 | | mg/kg wet | 2.500 | | 90 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.29 | | mg/kg wet | 2.500 | | 92 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|------|----|--|
| 1,1,1,2-Tetrachloroethane | 2.51 | 0.100 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| 1,1,1-Trichloroethane | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.6 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 5 | 25 | |
| 1,1,2-Trichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| 1,1-Dichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.08 | 25 | |
| 1,1-Dichloroethene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.1 | 25 | |
| 1,1-Dichloropropene | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.6 | 25 | |
| 1,2,3-Trichlorobenzene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 2 | 25 | |
| 1,2,3-Trichloropropane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 5 | 25 | |
| 1,2,4-Trichlorobenzene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 0.9 | 25 | |
| 1,2,4-Trimethylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.08 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.46 | 0.300 | mg/kg wet | 2.500 | | 99 | 70-130 | 4 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|------|-----|--|
| 1,2-Dibromoethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| 1,2-Dichlorobenzene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 2 | 25 | |
| 1,2-Dichloroethane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.5 | 25 | |
| 1,2-Dichloropropane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.3 | 25 | |
| 1,3,5-Trimethylbenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.8 | 25 | |
| 1,3-Dichlorobenzene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.7 | 25 | |
| 1,3-Dichloropropane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| 1,4-Dichlorobenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| 1,4-Dioxane - Screen | 58.4 | 5.00 | mg/kg wet | 50.00 | | 117 | 44-241 | 3 | 200 | |
| 1-Chlorohexane | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 3 | 25 | |
| 2,2-Dichloropropane | 2.59 | 0.100 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| 2-Butanone | 11.8 | 1.25 | mg/kg wet | 12.50 | | 94 | 70-130 | 4 | 25 | |
| 2-Chlorotoluene | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 5 | 25 | |
| 2-Hexanone | 11.6 | 0.500 | mg/kg wet | 12.50 | | 93 | 70-130 | 6 | 25 | |
| 4-Chlorotoluene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| 4-Isopropyltoluene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.08 | 25 | |
| 4-Methyl-2-Pentanone | 12.1 | 0.500 | mg/kg wet | 12.50 | | 96 | 70-130 | 3 | 25 | |
| Acetone | 12.3 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | 2 | 25 | |
| Benzene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 0.5 | 25 | |
| Bromobenzene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 0.1 | 25 | |
| Bromochloromethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| Bromodichloromethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.3 | 25 | |
| Bromoform | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 3 | 25 | |
| Bromomethane | 2.33 | 0.100 | mg/kg wet | 2.500 | | 93 | 70-130 | 4 | 25 | |
| Carbon Disulfide | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| Carbon Tetrachloride | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.6 | 25 | |
| Chlorobenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.8 | 25 | |
| Chloroethane | 2.33 | 0.100 | mg/kg wet | 2.500 | | 93 | 70-130 | 8 | 25 | |
| Chloroform | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.9 | 25 | |
| Chloromethane | 2.29 | 0.100 | mg/kg wet | 2.500 | | 91 | 70-130 | 0.5 | 25 | |
| cis-1,2-Dichloroethene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| cis-1,3-Dichloropropene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 0.07 | 25 | |
| Dibromochloromethane | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.5 | 25 | |
| Dibromomethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.4 | 25 | |
| Dichlorodifluoromethane | 1.94 | 0.0500 | mg/kg wet | 2.500 | | 78 | 70-130 | 2 | 25 | |
| Diethyl Ether | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| Di-isopropyl ether | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.08 | 25 | |
| Ethyl tertiary-butyl ether | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.1 | 25 | |
| Ethylbenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.5 | 25 | |
| Hexachlorobutadiene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 4 | 25 | |
| Isopropylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.8 | 25 | |
| Methyl tert-Butyl Ether | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| Methylene Chloride | 2.49 | 0.250 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| Naphthalene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 1 | 25 | |
| n-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.2 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| n-Propylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| sec-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.2 | 25 | |
| Styrene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.4 | 25 | |
| tert-Butylbenzene | 2.95 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | 0.7 | 25 | |
| Tertiary-amyl methyl ether | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| Tetrachloroethene | 1.88 | 0.0500 | mg/kg wet | 2.500 | | 75 | 70-130 | 0.6 | 25 | |
| Tetrahydrofuran | 2.81 | 0.500 | mg/kg wet | 2.500 | | 112 | 70-130 | 15 | 25 | |
| Toluene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 2 | 25 | |
| trans-1,2-Dichloroethene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.7 | 25 | |
| trans-1,3-Dichloropropene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 1 | 25 | |
| Trichloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| Vinyl Acetate | 2.79 | 0.250 | mg/kg wet | 2.500 | | 112 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 1 | 25 | |
| Xylene O | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| Xylene P,M | 5.33 | 0.100 | mg/kg wet | 5.000 | | 107 | 70-130 | 0.2 | 25 | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.21 | | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.25 | | mg/kg wet | 2.500 | | 90 | 70-130 | | | |

8082 Polychlorinated Biphenyls (PCB)

Batch CE42106 - 3540C

| Blank | | | | | | | | | | |
|--------------|----|--------|-----------|--|--|--|--|--|--|--|
| Aroclor 1016 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1221 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1232 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1242 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1248 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1254 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1260 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1262 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1268 | ND | 0.0500 | mg/kg wet | | | | | | | |

| | | | | | | | | | | |
|--------------------------------------|--------|--|-----------|---------|--|-----|--------|--|--|--|
| Surrogate: Decachlorobiphenyl | 0.0260 | | mg/kg wet | 0.02500 | | 104 | 30-150 | | | |
| Surrogate: Decachlorobiphenyl [2C] | 0.0249 | | mg/kg wet | 0.02500 | | 99 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene | 0.0218 | | mg/kg wet | 0.02500 | | 87 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene [2C] | 0.0231 | | mg/kg wet | 0.02500 | | 92 | 30-150 | | | |

| LCS | | | | | | | | | | |
|--------------|-------|--------|-----------|--------|--|-----|--------|--|--|--|
| Aroclor 1016 | 0.525 | 0.0500 | mg/kg wet | 0.5000 | | 105 | 40-140 | | | |
| Aroclor 1260 | 0.543 | 0.0500 | mg/kg wet | 0.5000 | | 109 | 40-140 | | | |

| | | | | | | | | | | |
|--------------------------------------|--------|--|-----------|---------|--|-----|--------|--|--|--|
| Surrogate: Decachlorobiphenyl | 0.0271 | | mg/kg wet | 0.02500 | | 109 | 30-150 | | | |
| Surrogate: Decachlorobiphenyl [2C] | 0.0264 | | mg/kg wet | 0.02500 | | 105 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene | 0.0250 | | mg/kg wet | 0.02500 | | 100 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene [2C] | 0.0248 | | mg/kg wet | 0.02500 | | 99 | 30-150 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8082 Polychlorinated Biphenyls (PCB)

Batch CE42106 - 3540C

| LCS Dup | | | | | | | | | | |
|--------------------------------------|--------|--------|-----------|---------|--|-----|--------|-----|----|--|
| Aroclor 1016 | 0.529 | 0.0500 | mg/kg wet | 0.5000 | | 106 | 40-140 | 0.7 | 30 | |
| Aroclor 1260 | 0.544 | 0.0500 | mg/kg wet | 0.5000 | | 109 | 40-140 | 0.2 | 30 | |
| Surrogate: Decachlorobiphenyl | 0.0277 | | mg/kg wet | 0.02500 | | 111 | 30-150 | | | |
| Surrogate: Decachlorobiphenyl [2C] | 0.0267 | | mg/kg wet | 0.02500 | | 107 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene | 0.0252 | | mg/kg wet | 0.02500 | | 101 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene [2C] | 0.0250 | | mg/kg wet | 0.02500 | | 100 | 30-150 | | | |

Batch CE42917 - 3540C

| Blank | | | | | | | | | | |
|--------------------------------------|--------|--------|-----------|---------|--|----|--------|--|--|--|
| Aroclor 1016 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1221 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1232 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1242 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1248 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1254 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1260 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1262 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1268 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Surrogate: Decachlorobiphenyl | 0.0226 | | mg/kg wet | 0.02500 | | 91 | 30-150 | | | |
| Surrogate: Decachlorobiphenyl [2C] | 0.0219 | | mg/kg wet | 0.02500 | | 87 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene | 0.0200 | | mg/kg wet | 0.02500 | | 80 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene [2C] | 0.0222 | | mg/kg wet | 0.02500 | | 89 | 30-150 | | | |

| LCS | | | | | | | | | | |
|--------------------------------------|--------|--------|-----------|---------|--|-----|--------|--|--|--|
| Aroclor 1016 | 0.517 | 0.0500 | mg/kg wet | 0.5000 | | 103 | 40-140 | | | |
| Aroclor 1260 | 0.491 | 0.0500 | mg/kg wet | 0.5000 | | 98 | 40-140 | | | |
| Surrogate: Decachlorobiphenyl | 0.0249 | | mg/kg wet | 0.02500 | | 100 | 30-150 | | | |
| Surrogate: Decachlorobiphenyl [2C] | 0.0242 | | mg/kg wet | 0.02500 | | 97 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene | 0.0224 | | mg/kg wet | 0.02500 | | 89 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene [2C] | 0.0240 | | mg/kg wet | 0.02500 | | 96 | 30-150 | | | |

| LCS Dup | | | | | | | | | | |
|--------------------------------------|--------|--------|-----------|---------|--|-----|--------|---|----|--|
| Aroclor 1016 | 0.508 | 0.0500 | mg/kg wet | 0.5000 | | 102 | 40-140 | 2 | 30 | |
| Aroclor 1260 | 0.497 | 0.0500 | mg/kg wet | 0.5000 | | 99 | 40-140 | 1 | 30 | |
| Surrogate: Decachlorobiphenyl | 0.0245 | | mg/kg wet | 0.02500 | | 98 | 30-150 | | | |
| Surrogate: Decachlorobiphenyl [2C] | 0.0238 | | mg/kg wet | 0.02500 | | 95 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene | 0.0219 | | mg/kg wet | 0.02500 | | 88 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene [2C] | 0.0233 | | mg/kg wet | 0.02500 | | 93 | 30-150 | | | |

8100M Total Petroleum Hydrocarbons

Batch CE42107 - 3546

| Blank | | | | | | | | | | |
|--------------|----|-----|-----------|--|--|--|--|--|--|--|
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8100M Total Petroleum Hydrocarbons

Batch CE42107 - 3546

| | | | | | | | | | | |
|------------------------------|----|------|-----------|--|--|--|--|--|--|--|
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacontane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |

| | | | | | | | | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|
| <i>Surrogate: O-Terphenyl</i> | 4.35 | | mg/kg wet | 5.000 | | 87 | 40-140 | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|

LCS

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|-----|--------|--|--|--|
| Decane (C10) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Docosane (C22) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | | | |
| Dodecane (C12) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 93 | 40-140 | | | |
| Eicosane (C20) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | | | |
| Hexacosane (C26) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | | | |
| Hexadecane (C16) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | | | |
| Nonadecane (C19) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | | | |
| Nonane (C9) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 76 | 30-140 | | | |
| Octacosane (C28) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 99 | 40-140 | | | |
| Octadecane (C18) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | | | |
| Tetracosane (C24) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 98 | 40-140 | | | |
| Tetradecane (C14) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 34.8 | 37.5 | mg/kg wet | 35.00 | | 99 | 40-140 | | | |
| Triacontane (C30) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 100 | 40-140 | | | |

| | | | | | | | | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|
| <i>Surrogate: O-Terphenyl</i> | 4.24 | | mg/kg wet | 5.000 | | 85 | 40-140 | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|

LCS Dup

| | | | | | | | | | | |
|-------------------|-----|-----|-----------|-------|--|-----|--------|---|----|--|
| Decane (C10) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 93 | 40-140 | 7 | 25 | |
| Docosane (C22) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 101 | 40-140 | 5 | 25 | |
| Dodecane (C12) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 100 | 40-140 | 7 | 25 | |
| Eicosane (C20) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 102 | 40-140 | 5 | 25 | |
| Hexacosane (C26) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 103 | 40-140 | 6 | 25 | |
| Hexadecane (C16) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | 3 | 25 | |
| Nonadecane (C19) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 104 | 40-140 | 7 | 25 | |
| Nonane (C9) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 82 | 30-140 | 8 | 25 | |
| Octacosane (C28) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 104 | 40-140 | 5 | 25 | |
| Octadecane (C18) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 102 | 40-140 | 7 | 25 | |
| Tetracosane (C24) | 2.6 | 0.2 | mg/kg wet | 2.500 | | 104 | 40-140 | 6 | 25 | |
| Tetradecane (C14) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | 4 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8100M Total Petroleum Hydrocarbons

Batch CE42107 - 3546

| | | | | | | | | | | |
|-------------------------------|-------------|------|-----------|--------------|--|-----------|---------------|---|----|--|
| Total Petroleum Hydrocarbons | 37.1 | 37.5 | mg/kg wet | 35.00 | | 106 | 40-140 | 6 | 25 | |
| Triacotane (C30) | 2.7 | 0.2 | mg/kg wet | 2.500 | | 106 | 40-140 | 6 | 25 | |
| <i>Surrogate: O-Terphenyl</i> | <i>4.43</i> | | mg/kg wet | <i>5.000</i> | | <i>89</i> | <i>40-140</i> | | | |

8270C Semi-Volatile Organic Compounds

Batch CE42011 - 3546

Blank

| | | | |
|------------------------------|----|-------|-----------|
| 1,1-Biphenyl | ND | 0.333 | mg/kg wet |
| 1,2,4-Trichlorobenzene | ND | 0.333 | mg/kg wet |
| 1,2-Dichlorobenzene | ND | 0.333 | mg/kg wet |
| 1,3-Dichlorobenzene | ND | 0.333 | mg/kg wet |
| 1,4-Dichlorobenzene | ND | 0.333 | mg/kg wet |
| 2,3,4,6-Tetrachlorophenol | ND | 1.67 | mg/kg wet |
| 2,4,5-Trichlorophenol | ND | 0.333 | mg/kg wet |
| 2,4,6-Trichlorophenol | ND | 0.333 | mg/kg wet |
| 2,4-Dichlorophenol | ND | 0.333 | mg/kg wet |
| 2,4-Dimethylphenol | ND | 0.333 | mg/kg wet |
| 2,4-Dinitrophenol | ND | 1.67 | mg/kg wet |
| 2,4-Dinitrotoluene | ND | 0.333 | mg/kg wet |
| 2,6-Dinitrotoluene | ND | 0.333 | mg/kg wet |
| 2-Chloronaphthalene | ND | 0.333 | mg/kg wet |
| 2-Chlorophenol | ND | 0.333 | mg/kg wet |
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet |
| 2-Methylphenol | ND | 0.333 | mg/kg wet |
| 2-Nitroaniline | ND | 0.333 | mg/kg wet |
| 2-Nitrophenol | ND | 0.333 | mg/kg wet |
| 3,3'-Dichlorobenzidine | ND | 0.667 | mg/kg wet |
| 3+4-Methylphenol | ND | 0.667 | mg/kg wet |
| 3-Nitroaniline | ND | 0.333 | mg/kg wet |
| 4,6-Dinitro-2-Methylphenol | ND | 1.67 | mg/kg wet |
| 4-Bromophenyl-phenylether | ND | 0.333 | mg/kg wet |
| 4-Chloro-3-Methylphenol | ND | 0.333 | mg/kg wet |
| 4-Chloroaniline | ND | 0.667 | mg/kg wet |
| 4-Chloro-phenyl-phenyl ether | ND | 0.333 | mg/kg wet |
| 4-Nitroaniline | ND | 0.333 | mg/kg wet |
| 4-Nitrophenol | ND | 1.67 | mg/kg wet |
| Acenaphthene | ND | 0.333 | mg/kg wet |
| Acenaphthylene | ND | 0.333 | mg/kg wet |
| Acetophenone | ND | 0.667 | mg/kg wet |
| Aniline | ND | 0.667 | mg/kg wet |
| Anthracene | ND | 0.333 | mg/kg wet |
| Azobenzene | ND | 0.333 | mg/kg wet |
| Benzo(a)anthracene | ND | 0.333 | mg/kg wet |
| Benzo(a)pyrene | ND | 0.167 | mg/kg wet |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Semi-Volatile Organic Compounds

Batch CE42011 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| Benzo(b)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzoic Acid | ND | 1.67 | mg/kg wet | | | | | | | |
| Benzyl Alcohol | ND | 0.333 | mg/kg wet | | | | | | | |
| bis(2-Chloroethoxy)methane | ND | 0.333 | mg/kg wet | | | | | | | |
| bis(2-Chloroethyl)ether | ND | 0.333 | mg/kg wet | | | | | | | |
| bis(2-chloroisopropyl)Ether | ND | 0.333 | mg/kg wet | | | | | | | |
| bis(2-Ethylhexyl)phthalate | ND | 0.333 | mg/kg wet | | | | | | | |
| Butylbenzylphthalate | ND | 0.333 | mg/kg wet | | | | | | | |
| Carbazole | ND | 0.333 | mg/kg wet | | | | | | | |
| Chrysene | ND | 0.167 | mg/kg wet | | | | | | | |
| Dibenzo(a,h)Anthracene | ND | 0.167 | mg/kg wet | | | | | | | |
| Dibenzofuran | ND | 0.333 | mg/kg wet | | | | | | | |
| Diethylphthalate | ND | 0.333 | mg/kg wet | | | | | | | |
| Dimethylphthalate | ND | 0.333 | mg/kg wet | | | | | | | |
| Di-n-butylphthalate | ND | 0.333 | mg/kg wet | | | | | | | |
| Di-n-octylphthalate | ND | 0.333 | mg/kg wet | | | | | | | |
| Fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Fluorene | ND | 0.333 | mg/kg wet | | | | | | | |
| Hexachlorobenzene | ND | 0.167 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.333 | mg/kg wet | | | | | | | |
| Hexachlorocyclopentadiene | ND | 1.67 | mg/kg wet | | | | | | | |
| Hexachloroethane | ND | 0.333 | mg/kg wet | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Isophorone | ND | 0.333 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Nitrobenzene | ND | 0.333 | mg/kg wet | | | | | | | |
| N-Nitrosodimethylamine | ND | 0.333 | mg/kg wet | | | | | | | |
| N-Nitroso-Di-n-Propylamine | ND | 0.333 | mg/kg wet | | | | | | | |
| N-nitrosodiphenylamine | ND | 0.333 | mg/kg wet | | | | | | | |
| Pentachlorophenol | ND | 1.67 | mg/kg wet | | | | | | | |
| Phenanthrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Phenol | ND | 0.333 | mg/kg wet | | | | | | | |
| Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Pyridine | ND | 1.67 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.71 | | mg/kg wet | 3.333 | | 81 | 30-130 | | | |
| Surrogate: 2,4,6-Tribromophenol | 5.30 | | mg/kg wet | 5.000 | | 106 | 30-130 | | | |
| Surrogate: 2-Chlorophenol-d4 | 3.93 | | mg/kg wet | 5.000 | | 79 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.04 | | mg/kg wet | 3.333 | | 91 | 30-130 | | | |
| Surrogate: 2-Fluorophenol | 3.40 | | mg/kg wet | 5.000 | | 68 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.64 | | mg/kg wet | 3.333 | | 79 | 30-130 | | | |
| Surrogate: Phenol-d6 | 4.00 | | mg/kg wet | 5.000 | | 80 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 4.12 | | mg/kg wet | 3.333 | | 123 | 30-130 | | | |

LCS



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Semi-Volatile Organic Compounds

Batch CE42011 - 3546

| | | | | | | | | | | |
|------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 1,1-Biphenyl | 2.45 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | | | |
| 1,2,4-Trichlorobenzene | 2.61 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | | | |
| 1,2-Dichlorobenzene | 2.44 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | | | |
| 1,3-Dichlorobenzene | 2.38 | 0.333 | mg/kg wet | 3.333 | | 71 | 40-140 | | | |
| 1,4-Dichlorobenzene | 2.44 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | | | |
| 2,3,4,6-Tetrachlorophenol | 2.93 | 1.67 | mg/kg wet | 3.333 | | 88 | 30-130 | | | |
| 2,4,5-Trichlorophenol | 3.05 | 0.333 | mg/kg wet | 3.333 | | 92 | 30-130 | | | |
| 2,4,6-Trichlorophenol | 3.02 | 0.333 | mg/kg wet | 3.333 | | 91 | 30-130 | | | |
| 2,4-Dichlorophenol | 2.67 | 0.333 | mg/kg wet | 3.333 | | 80 | 30-130 | | | |
| 2,4-Dimethylphenol | 2.74 | 0.333 | mg/kg wet | 3.333 | | 82 | 30-130 | | | |
| 2,4-Dinitrophenol | 1.99 | 1.67 | mg/kg wet | 3.333 | | 60 | 30-130 | | | |
| 2,4-Dinitrotoluene | 2.96 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | | | |
| 2,6-Dinitrotoluene | 2.84 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | | | |
| 2-Chloronaphthalene | 2.29 | 0.333 | mg/kg wet | 3.333 | | 69 | 40-140 | | | |
| 2-Chlorophenol | 2.47 | 0.333 | mg/kg wet | 3.333 | | 74 | 30-130 | | | |
| 2-Methylnaphthalene | 2.59 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | | | |
| 2-Methylphenol | 2.49 | 0.333 | mg/kg wet | 3.333 | | 75 | 30-130 | | | |
| 2-Nitroaniline | 2.24 | 0.333 | mg/kg wet | 3.333 | | 67 | 40-140 | | | |
| 2-Nitrophenol | 2.68 | 0.333 | mg/kg wet | 3.333 | | 80 | 30-130 | | | |
| 3,3'-Dichlorobenzidine | 2.32 | 0.667 | mg/kg wet | 3.333 | | 70 | 40-140 | | | |
| 3+4-Methylphenol | 5.42 | 0.667 | mg/kg wet | 6.667 | | 81 | 30-130 | | | |
| 3-Nitroaniline | 2.58 | 0.333 | mg/kg wet | 3.333 | | 77 | 40-140 | | | |
| 4,6-Dinitro-2-Methylphenol | 2.48 | 1.67 | mg/kg wet | 3.333 | | 74 | 30-130 | | | |
| 4-Bromophenyl-phenylether | 3.01 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | | | |
| 4-Chloro-3-Methylphenol | 2.79 | 0.333 | mg/kg wet | 3.333 | | 84 | 30-130 | | | |
| 4-Chloroaniline | 1.81 | 0.667 | mg/kg wet | 3.333 | | 54 | 40-140 | | | |
| 4-Chloro-phenyl-phenyl ether | 2.72 | 0.333 | mg/kg wet | 3.333 | | 82 | 40-140 | | | |
| 4-Nitroaniline | 2.60 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | | | |
| 4-Nitrophenol | 3.45 | 1.67 | mg/kg wet | 3.333 | | 104 | 30-130 | | | |
| Acenaphthene | 2.60 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | | | |
| Acenaphthylene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | | | |
| Acetophenone | 2.37 | 0.667 | mg/kg wet | 3.333 | | 71 | 40-140 | | | |
| Aniline | 1.82 | 0.667 | mg/kg wet | 3.333 | | 55 | 40-140 | | | |
| Anthracene | 2.70 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Azobenzene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | | | |
| Benzo(a)anthracene | 2.98 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | | | |
| Benzo(a)pyrene | 2.70 | 0.167 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Benzo(b)fluoranthene | 3.21 | 0.333 | mg/kg wet | 3.333 | | 96 | 40-140 | | | |
| Benzo(g,h,i)perylene | 2.99 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | | | |
| Benzo(k)fluoranthene | 2.86 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Benzoic Acid | 1.59 | 1.67 | mg/kg wet | 3.333 | | 48 | 40-140 | | | |
| Benzyl Alcohol | 2.37 | 0.333 | mg/kg wet | 3.333 | | 71 | 40-140 | | | |
| bis(2-Chloroethoxy)methane | 2.53 | 0.333 | mg/kg wet | 3.333 | | 76 | 40-140 | | | |
| bis(2-Chloroethyl)ether | 2.27 | 0.333 | mg/kg wet | 3.333 | | 68 | 40-140 | | | |
| bis(2-chloroisopropyl)Ether | 2.43 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Semi-Volatile Organic Compounds

Batch CE42011 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| bis(2-Ethylhexyl)phthalate | 2.76 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | | | |
| Butylbenzylphthalate | 3.09 | 0.333 | mg/kg wet | 3.333 | | 93 | 40-140 | | | |
| Carbazole | 2.88 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Chrysene | 2.88 | 0.167 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Dibenzo(a,h)Anthracene | 3.31 | 0.167 | mg/kg wet | 3.333 | | 99 | 40-140 | | | |
| Dibenzofuran | 2.63 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | | | |
| Diethylphthalate | 2.81 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | | | |
| Dimethylphthalate | 2.80 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | | | |
| Di-n-butylphthalate | 2.84 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | | | |
| Di-n-octylphthalate | 3.08 | 0.333 | mg/kg wet | 3.333 | | 92 | 40-140 | | | |
| Fluoranthene | 2.90 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Fluorene | 2.73 | 0.333 | mg/kg wet | 3.333 | | 82 | 40-140 | | | |
| Hexachlorobenzene | 3.24 | 0.167 | mg/kg wet | 3.333 | | 97 | 40-140 | | | |
| Hexachlorobutadiene | 2.66 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | | | |
| Hexachlorocyclopentadiene | 1.34 | 1.67 | mg/kg wet | 3.333 | | 40 | 40-140 | | | |
| Hexachloroethane | 2.44 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | | | |
| Indeno(1,2,3-cd)Pyrene | 3.31 | 0.333 | mg/kg wet | 3.333 | | 99 | 40-140 | | | |
| Isophorone | 2.48 | 0.333 | mg/kg wet | 3.333 | | 74 | 40-140 | | | |
| Naphthalene | 2.66 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | | | |
| Nitrobenzene | 2.45 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | | | |
| N-Nitrosodimethylamine | 2.76 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | | | |
| N-Nitroso-Di-n-Propylamine | 2.45 | 0.333 | mg/kg wet | 3.333 | | 74 | 40-140 | | | |
| N-nitrosodiphenylamine | 2.75 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | | | |
| Pentachlorophenol | 2.87 | 1.67 | mg/kg wet | 3.333 | | 86 | 30-130 | | | |
| Phenanthrene | 2.75 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | | | |
| Phenol | 2.16 | 0.333 | mg/kg wet | 3.333 | | 65 | 30-130 | | | |
| Pyrene | 3.06 | 0.333 | mg/kg wet | 3.333 | | 92 | 40-140 | | | |
| Pyridine | 2.20 | 1.67 | mg/kg wet | 3.333 | | 66 | 40-140 | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.81 | | mg/kg wet | 3.333 | | 84 | 30-130 | | | |
| Surrogate: 2,4,6-Tribromophenol | 6.03 | | mg/kg wet | 5.000 | | 121 | 30-130 | | | |
| Surrogate: 2-Chlorophenol-d4 | 3.95 | | mg/kg wet | 5.000 | | 79 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.11 | | mg/kg wet | 3.333 | | 93 | 30-130 | | | |
| Surrogate: 2-Fluorophenol | 3.52 | | mg/kg wet | 5.000 | | 70 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.70 | | mg/kg wet | 3.333 | | 81 | 30-130 | | | |
| Surrogate: Phenol-d6 | 3.93 | | mg/kg wet | 5.000 | | 79 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.78 | | mg/kg wet | 3.333 | | 113 | 30-130 | | | |

LCS Dup

| | | | | | | | | | | |
|---------------------------|------|-------|-----------|-------|--|----|--------|----|----|--|
| 1,1-Biphenyl | 2.15 | 0.333 | mg/kg wet | 3.333 | | 65 | 40-140 | 13 | 30 | |
| 1,2,4-Trichlorobenzene | 2.27 | 0.333 | mg/kg wet | 3.333 | | 68 | 40-140 | 14 | 30 | |
| 1,2-Dichlorobenzene | 2.10 | 0.333 | mg/kg wet | 3.333 | | 63 | 40-140 | 15 | 30 | |
| 1,3-Dichlorobenzene | 2.03 | 0.333 | mg/kg wet | 3.333 | | 61 | 40-140 | 16 | 30 | |
| 1,4-Dichlorobenzene | 2.07 | 0.333 | mg/kg wet | 3.333 | | 62 | 40-140 | 16 | 30 | |
| 2,3,4,6-Tetrachlorophenol | 2.77 | 1.67 | mg/kg wet | 3.333 | | 83 | 30-130 | 6 | 30 | |
| 2,4,5-Trichlorophenol | 2.78 | 0.333 | mg/kg wet | 3.333 | | 83 | 30-130 | 9 | 30 | |
| 2,4,6-Trichlorophenol | 2.70 | 0.333 | mg/kg wet | 3.333 | | 81 | 30-130 | 11 | 30 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Semi-Volatile Organic Compounds

Batch CE42011 - 3546

| | | | | | | | | | | |
|------------------------------|------|-------|-----------|-------|--|----|--------|----|----|--|
| 2,4-Dichlorophenol | 2.19 | 0.333 | mg/kg wet | 3.333 | | 66 | 30-130 | 20 | 30 | |
| 2,4-Dimethylphenol | 2.30 | 0.333 | mg/kg wet | 3.333 | | 69 | 30-130 | 18 | 30 | |
| 2,4-Dinitrophenol | 1.93 | 1.67 | mg/kg wet | 3.333 | | 58 | 30-130 | 3 | 30 | |
| 2,4-Dinitrotoluene | 2.76 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | 7 | 30 | |
| 2,6-Dinitrotoluene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | 7 | 30 | |
| 2-Chloronaphthalene | 1.99 | 0.333 | mg/kg wet | 3.333 | | 60 | 40-140 | 14 | 30 | |
| 2-Chlorophenol | 2.05 | 0.333 | mg/kg wet | 3.333 | | 62 | 30-130 | 18 | 30 | |
| 2-Methylnaphthalene | 2.17 | 0.333 | mg/kg wet | 3.333 | | 65 | 40-140 | 18 | 30 | |
| 2-Methylphenol | 2.08 | 0.333 | mg/kg wet | 3.333 | | 62 | 30-130 | 18 | 30 | |
| 2-Nitroaniline | 2.10 | 0.333 | mg/kg wet | 3.333 | | 63 | 40-140 | 6 | 30 | |
| 2-Nitrophenol | 2.29 | 0.333 | mg/kg wet | 3.333 | | 69 | 30-130 | 16 | 30 | |
| 3,3'-Dichlorobenzidine | 2.22 | 0.667 | mg/kg wet | 3.333 | | 67 | 40-140 | 4 | 30 | |
| 3+4-Methylphenol | 4.38 | 0.667 | mg/kg wet | 6.667 | | 66 | 30-130 | 21 | 30 | |
| 3-Nitroaniline | 2.39 | 0.333 | mg/kg wet | 3.333 | | 72 | 40-140 | 8 | 30 | |
| 4,6-Dinitro-2-Methylphenol | 2.38 | 1.67 | mg/kg wet | 3.333 | | 72 | 30-130 | 4 | 30 | |
| 4-Bromophenyl-phenylether | 2.84 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | 6 | 30 | |
| 4-Chloro-3-Methylphenol | 2.41 | 0.333 | mg/kg wet | 3.333 | | 72 | 30-130 | 15 | 30 | |
| 4-Chloroaniline | 1.48 | 0.667 | mg/kg wet | 3.333 | | 44 | 40-140 | 20 | 30 | |
| 4-Chloro-phenyl-phenyl ether | 2.51 | 0.333 | mg/kg wet | 3.333 | | 75 | 40-140 | 8 | 30 | |
| 4-Nitroaniline | 2.37 | 0.333 | mg/kg wet | 3.333 | | 71 | 40-140 | 9 | 30 | |
| 4-Nitrophenol | 3.22 | 1.67 | mg/kg wet | 3.333 | | 97 | 30-130 | 7 | 30 | |
| Acenaphthene | 2.34 | 0.333 | mg/kg wet | 3.333 | | 70 | 40-140 | 11 | 30 | |
| Acenaphthylene | 2.36 | 0.333 | mg/kg wet | 3.333 | | 71 | 40-140 | 11 | 30 | |
| Acetophenone | 1.93 | 0.667 | mg/kg wet | 3.333 | | 58 | 40-140 | 20 | 30 | |
| Aniline | 1.51 | 0.667 | mg/kg wet | 3.333 | | 45 | 40-140 | 19 | 30 | |
| Anthracene | 2.58 | 0.333 | mg/kg wet | 3.333 | | 77 | 40-140 | 4 | 30 | |
| Azobenzene | 2.47 | 0.333 | mg/kg wet | 3.333 | | 74 | 40-140 | 7 | 30 | |
| Benzo(a)anthracene | 2.87 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 4 | 30 | |
| Benzo(a)pyrene | 2.62 | 0.167 | mg/kg wet | 3.333 | | 78 | 40-140 | 3 | 30 | |
| Benzo(b)fluoranthene | 3.14 | 0.333 | mg/kg wet | 3.333 | | 94 | 40-140 | 2 | 30 | |
| Benzo(g,h,i)perylene | 2.92 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | 2 | 30 | |
| Benzo(k)fluoranthene | 2.72 | 0.333 | mg/kg wet | 3.333 | | 82 | 40-140 | 5 | 30 | |
| Benzoic Acid | 1.48 | 1.67 | mg/kg wet | 3.333 | | 44 | 40-140 | 8 | 30 | |
| Benzyl Alcohol | 1.90 | 0.333 | mg/kg wet | 3.333 | | 57 | 40-140 | 22 | 30 | |
| bis(2-Chloroethoxy)methane | 2.15 | 0.333 | mg/kg wet | 3.333 | | 64 | 40-140 | 16 | 30 | |
| bis(2-Chloroethyl)ether | 1.92 | 0.333 | mg/kg wet | 3.333 | | 58 | 40-140 | 17 | 30 | |
| bis(2-chloroisopropyl)Ether | 2.03 | 0.333 | mg/kg wet | 3.333 | | 61 | 40-140 | 18 | 30 | |
| bis(2-Ethylhexyl)phthalate | 2.63 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | 5 | 30 | |
| Butylbenzylphthalate | 2.94 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | 5 | 30 | |
| Carbazole | 2.76 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | 4 | 30 | |
| Chrysene | 2.71 | 0.167 | mg/kg wet | 3.333 | | 81 | 40-140 | 6 | 30 | |
| Dibenzo(a,h)Anthracene | 3.26 | 0.167 | mg/kg wet | 3.333 | | 98 | 40-140 | 2 | 30 | |
| Dibenzofuran | 2.22 | 0.333 | mg/kg wet | 3.333 | | 67 | 40-140 | 17 | 30 | |
| Diethylphthalate | 2.63 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | 7 | 30 | |
| Dimethylphthalate | 2.56 | 0.333 | mg/kg wet | 3.333 | | 77 | 40-140 | 9 | 30 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Semi-Volatile Organic Compounds

Batch CE42011 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|----|----|----|
| Di-n-butylphthalate | 2.74 | 0.333 | mg/kg wet | 3.333 | | 82 | 40-140 | 4 | 30 | |
| Di-n-octylphthalate | 2.98 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | 3 | 30 | |
| Fluoranthene | 2.84 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | 2 | 30 | |
| Fluorene | 2.49 | 0.333 | mg/kg wet | 3.333 | | 75 | 40-140 | 9 | 30 | |
| Hexachlorobenzene | 3.10 | 0.167 | mg/kg wet | 3.333 | | 93 | 40-140 | 4 | 30 | |
| Hexachlorobutadiene | 2.37 | 0.333 | mg/kg wet | 3.333 | | 71 | 40-140 | 12 | 30 | |
| Hexachlorocyclopentadiene | 1.16 | 1.67 | mg/kg wet | 3.333 | | 35 | 40-140 | 14 | 30 | B- |
| Hexachloroethane | 2.02 | 0.333 | mg/kg wet | 3.333 | | 61 | 40-140 | 18 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 3.23 | 0.333 | mg/kg wet | 3.333 | | 97 | 40-140 | 2 | 30 | |
| Isophorone | 2.09 | 0.333 | mg/kg wet | 3.333 | | 63 | 40-140 | 17 | 30 | |
| Naphthalene | 2.25 | 0.333 | mg/kg wet | 3.333 | | 68 | 40-140 | 16 | 30 | |
| Nitrobenzene | 2.06 | 0.333 | mg/kg wet | 3.333 | | 62 | 40-140 | 17 | 30 | |
| N-Nitrosodimethylamine | 2.27 | 0.333 | mg/kg wet | 3.333 | | 68 | 40-140 | 19 | 30 | |
| N-Nitroso-Di-n-Propylamine | 1.98 | 0.333 | mg/kg wet | 3.333 | | 59 | 40-140 | 21 | 30 | |
| N-nitrosodiphenylamine | 2.62 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | 5 | 30 | |
| Pentachlorophenol | 2.75 | 1.67 | mg/kg wet | 3.333 | | 83 | 30-130 | 4 | 30 | |
| Phenanthrene | 2.67 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 3 | 30 | |
| Phenol | 1.73 | 0.333 | mg/kg wet | 3.333 | | 52 | 30-130 | 22 | 30 | |
| Pyrene | 2.80 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | 9 | 30 | |
| Pyridine | 1.84 | 1.67 | mg/kg wet | 3.333 | | 55 | 40-140 | 18 | 30 | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.24 | | mg/kg wet | 3.333 | | 67 | 30-130 | | | |
| Surrogate: 2,4,6-Tribromophenol | 5.38 | | mg/kg wet | 5.000 | | 108 | 30-130 | | | |
| Surrogate: 2-Chlorophenol-d4 | 3.16 | | mg/kg wet | 5.000 | | 63 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 2.56 | | mg/kg wet | 3.333 | | 77 | 30-130 | | | |
| Surrogate: 2-Fluorophenol | 2.87 | | mg/kg wet | 5.000 | | 57 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.21 | | mg/kg wet | 3.333 | | 66 | 30-130 | | | |
| Surrogate: Phenol-d6 | 3.10 | | mg/kg wet | 5.000 | | 62 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.34 | | mg/kg wet | 3.333 | | 100 | 30-130 | | | |

Classical Chemistry

Batch CE42329 - General Preparation

| Blank | | | | | | | | | | |
|------------------|-----|-----|-------|-------|--|---|-----------|--|--|--|
| Reactive Cyanide | ND | 2.0 | mg/kg | | | | | | | |
| Reactive Sulfide | ND | 2.0 | mg/kg | | | | | | | |
| LCS | | | | | | | | | | |
| Reactive Cyanide | 3.9 | 2.0 | mg/kg | 100.3 | | 4 | 0.68-5.41 | | | |
| Reactive Sulfide | 0.2 | 2.0 | mg/kg | 10.00 | | 2 | 0-44 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

Notes and Definitions

- S+ Surrogate recovery(ies) above upper control limit (S+).
- B- Blank Spike recovery is below lower control limit (B-).
- C- Continuing Calibration recovery is below lower control limit (C-).
- C+ Continuing Calibration recovery is above upper control limit (C+).
- D Diluted.
- ICV Initial Calibration Verification recovery is outside of control limit (ICV).
- J Reported between MDL and MRL
- B Present in Method Blank (B).
- R- Standard Reference Material is biased low (R-).
- Z17 Temperature is within 23 +/-2 °C.
- U Analyte included in the analysis, but not detected
- Z-10 Soil pH measured in water at 22.5 °C.
- Z-10a Soil pH measured in water at 22.7 °C.
- Z-10b Soil pH measured in water at 23.1 °C.
- Z-10c Soil pH measured in water at 23.5 °C.
- Z-10d Soil pH measured in water at 24.1 °C.
- Q Calibration required quadratic regression (Q).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405486

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 14050486
Date Project Due: 5/28/14
Days For Project: 5 Day

Items to be checked upon receipt:

- | | | | |
|---|-------------------------------|---|---|
| 1. Air Bill Manifest Present? | <input type="checkbox"/> * No | 10. Are the samples properly preserved? | <input type="checkbox"/> Yes |
| Air No.: | | 11. Proper sample containers used? | <input type="checkbox"/> Yes |
| 2. Were Custody Seals Present? | <input type="checkbox"/> No | 12. Any air bubbles in the VOA vials? | <input type="checkbox"/> N/A |
| 3. Were Custody Seals Intact? | <input type="checkbox"/> N/A | 13. Holding times exceeded? | <input type="checkbox"/> No |
| 4. Is Radiation count < 100 CPM? | <input type="checkbox"/> Yes | 14. Sufficient sample volumes? | <input type="checkbox"/> Yes |
| 5. Is a cooler present? | <input type="checkbox"/> Yes | 15. Any Subcontracting needed? | <input type="checkbox"/> No |
| <input type="text" value="Cooler Temp: 4.1"/> | | 16. Are ESS labels on correct containers? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="text" value="Iced With: Ice"/> | | 17. Were samples received intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Was COC included with samples? | <input type="checkbox"/> Yes | ESS Sample IDs: _____ | |
| 7. Was COC signed and dated by client? | <input type="checkbox"/> Yes | Sub Lab: _____ | |
| 8. Does the COC match the sample | <input type="checkbox"/> Yes | Analysis: _____ | |
| 9. Is COC complete and correct? | <input type="checkbox"/> Yes | TAT: _____ | |

18. Was there need to call project manager to discuss status? If yes, please explain.

Re-log of 1405457-02, -04, -06, -09, -11, -12

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 8 oz Soil Jar | 2 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 8 oz Soil Jar | 2 | NP |
| 3 | Yes | 40 ml - VOA | 1 | MeOH |
| 3 | Yes | 8 oz Soil Jar | 2 | NP |
| 4 | Yes | 40 ml - VOA | 1 | MeOH |
| 4 | Yes | 8 oz Soil Jar | 2 | NP |
| 5 | Yes | 40 ml - VOA | 1 | MeOH |
| 5 | Yes | 8 oz Soil Jar | 2 | NP |
| 6 | Yes | 40 ml - VOA | 1 | MeOH |

Completed By: [Signature] Date/Time: 5/21/14 1530
Reviewed By: [Signature] Date/Time: 5/21/14 1603

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

1405486
 Page 1 of 2

| | | | |
|--|--|---|-------------------------------|
| Turn Time If faster than 5 days, prior approval by laboratory is required # | Standard <input type="checkbox"/> Other <input type="checkbox"/> | Reporting Limits | ESS LAB PROJECT ID 1405486 |
| State where samples were collected from: MA (R) CT NH NJ NY ME Other | MA (R) CT NH NJ NY ME Other | Electronic Deliverable Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | OT 5/21/14 |
| Is this project for any of the following: MA-MCP Navy USACE Other | MA-MCP Navy USACE Other | Format: Excel <input checked="" type="checkbox"/> Access <input type="checkbox"/> PDF <input type="checkbox"/> Other <input type="checkbox"/> | |

| Co. Name | | Project # | | Project Name (20 Char. or less) | | Number of Containers | Type of Containers | Write Required Analysis | | | | | | | | | |
|-----------------------|---------|-----------------|------|---------------------------------|--------|--|--------------------|-------------------------|----|------------|------------|-----------|-------------|-----------|------------|------------------|------------------|
| G2A Co. Environmental | | 33554, 00 T-03 | | 642 Allens Ave | | | | HOLD | PH | VOCs 8260B | SVOCS 8270 | TPH 8100M | PCMX metals | PCB 5082A | TEL P lead | reactive cyanide | reactive sulfide |
| Contact Person | | Address | | Address | | | | | | | | | | | | | |
| Meg K. Petruck | | 530 Broadway | | 530 Broadway | | | | | | | | | | | | | |
| City | | State | | Zip | | PO# | | | | | | | | | | | |
| Providence | | RI | | 02909 | | | | | | | | | | | | | |
| Telephone # | | Fax # | | Email Address | | | | | | | | | | | | | |
| 401-421-4140 | | | | m.k.petruck@g2a.com | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | | | | | | | | | | |
| 1 | 5/20/14 | 1505 | | | S | 62-321 S-1 | 16 | 3 | 46 | X | X | X | X | X | X | X | |
| 2 | | 1515 | | | S | 62-321 S-2 | | | | | | | | | | | |
| 3 | | 1445 | | | S | 62-322 S-1 | | | | | | | | | | | |
| 4 | | 1455 | | | S | 62-322 S-2 | | | | | | | | | | | |
| 5 | | 10:20 | | | S | 62-323 S-1 | | | | | | | | | | | |
| 6 | | 10:30 | | | S | 62-323 S-2 | | | | | | | | | | | |
| 7 | | 1040 | | | S | 62-323 S-3 | | | | | | | | | | | |
| 8 | | 1355 | | | S | 62-324 S-1 | | | | | | | | | | | |
| 9 | | 1405 | | | S | 62-324 S-2 | | | | | | | | | | | |
| 10 | | 1425 | | | S | 62-324 S-3 | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | | |
|--|--|--|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Internal Use Only <input type="checkbox"/> | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No NA: _____ | [] Pickup | Sampled by: Matt Began / Sophia Norkiewicz |
| Cooler Temp: 4.10 ice 5/20/14 | [] Technicians _____ | Comments: NBRID PATES FULLY |

| | | | | | | | |
|------------------------------|--------------|--------------------------|--------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| <i>[Signature]</i> | 5/20/14 1632 | <i>[Signature]</i> | 5/20/14 1632 | | | | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

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*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

ESS Laboratory

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 185 Frances Avenue, Cranston, RI 02910-2211
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 www.esslaboratory.com

CHAIN OF CUSTODY

1405486
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| | | |
|--|--|--|
| Turn Time <u>Standard</u> Other _____ If faster than 5 days, prior approval by laboratory is required # _____ | Reporting Limits | ESS LAB PROJECT ID <u>1405457</u> <i>get still 14</i> |
| State where samples were collected from: MA RI <u>CT</u> NH NJ NY ME Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ | |
| Is this project for any of the following: MA-MCP Navy USACE Other _____ | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ | |

| Co. Name <u>G2A Ge-Environmental</u> | | Project # <u>3357-0528</u> | | Project Name (20 Char. or less) <u>642 Allen Ave</u> | | | | Write Required Analysis | | | | | | | | | | | | | | | |
|---|----------------|--------------------------------|------|---|----------|--|-----------|-------------------------|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Contact Person <u>Mrs Kilpatrick</u> | | Address <u>530 Broadway</u> | | City <u>Providence</u> | | State <u>RI</u> | | Zip <u>02909</u> | | PO# | | | | | | | | | | | | | |
| Telephone # <u>401-421-4140</u> | | Fax # | | Email Address <u>MKilpatrick@g2a.com</u> | | | | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | | | | | | | | | | | | | | |
| <u>6</u> <u>5</u> <u>17</u> | <u>5/20/14</u> | <u>0700</u> | | | | <u>TRIP BLANK</u> | <u>6</u> | <u>1</u> | <u>✓</u> | | | | | | | | | | | | | | |
| <u>16</u> | <u>5/20/14</u> | <u>0800</u> | | | <u>S</u> | <u>RSD</u> | <u>16</u> | <u>3</u> | <u>✓</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> | <u>PH</u> |

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | | |
|---|-----------------------|--|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Internal Use Only | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No NA: <input type="checkbox"/> [] Pickup | [] Technicians _____ | Sampled by: <u>Matt Beyer / Sophia Ndlovu</u> |
| Cooler Temp: <u>4.1° ice</u> | | Comments: <u>N6210 RATES APPLY</u> |

| | | | | | | | |
|--|-----------------------------------|--|----------------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <u>Sophia Ndlovu</u> | Date/Time <u>5/20/14 1163Z</u> | Received by: (Signature) <u>[Signature]</u> | Date/Time <u>5/20/14 163Z</u> | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

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CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554)
ESS Laboratory Work Order Number: 1405553

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 11:55 am, Jun 02, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

SAMPLE RECEIPT

The following samples were received on May 23, 2014 for the analyses specified on the enclosed Chain of Custody Record.

These samples were originally received on hold on May 19, 2014.

| <u>Lab Number</u> | <u>Sample Name</u> | <u>Matrix</u> | <u>Analysis</u> |
|-------------------|--------------------|---------------|---|
| 1405553-01 | GZ-311d S-2 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405553-02 | GZ-313d S-3 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405553-03 | BD-051914 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

1405553-01 [Present in Method Blank \(B\).](#)
Chloroform
1405553-02 [Present in Method Blank \(B\).](#)
Chloroform
1405553-03 [Present in Method Blank \(B\).](#)
Chloroform

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-311d S-2
Date Sampled: 05/19/14 14:40
Percent Solids: 89

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | 6.7 (4.6) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |
| Arsenic | 12.7 (2.3) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |
| Beryllium | 0.40 (0.10) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |
| Cadmium | ND (0.46) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |
| Chromium | 9.6 (0.9) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |
| Copper | 26.2 (2.3) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |
| Lead | 60.0 (4.6) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |
| Mercury | 0.101 (0.034) | | 7471A | | 1 | JP | 05/28/14 12:30 | 0.66 | 40 | CE42706 |
| Nickel | 11.4 (2.3) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |
| Selenium | ND (13.7) | | 6010B | | 3 | KJK | 05/29/14 15:26 | 2.46 | 100 | CE42705 |
| Silver | 0.77 (0.46) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |
| Thallium | ND (1.13) | | 7841 | | 5 | KJK | 05/29/14 3:05 | 2.46 | 100 | CE42705 |
| Zinc | 34.6 (2.3) | | 6010B | | 1 | KJK | 05/28/14 23:36 | 2.46 | 100 | CE42705 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-311d S-2
Date Sampled: 05/19/14 14:40
Percent Solids: 89
Initial Volume: 19.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0979) | 0.0085 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,1,1-Trichloroethane | ND (0.0490) | 0.0086 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,1,2,2-Tetrachloroethane | ND (0.0490) | 0.0133 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,1,2-Trichloroethane | ND (0.0490) | 0.0122 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,1-Dichloroethane | ND (0.0490) | 0.0078 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,1-Dichloroethene | ND (0.0490) | 0.0120 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,1-Dichloropropene | ND (0.0490) | 0.0075 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,2,3-Trichlorobenzene | ND (0.0490) | 0.0163 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,2,3-Trichloropropane | ND (0.0490) | 0.0121 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,2,4-Trichlorobenzene | ND (0.0490) | 0.0108 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,2,4-Trimethylbenzene | J 0.0284 (0.0490) | 0.0094 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,2-Dibromo-3-Chloropropane | ND (0.294) | 0.0979 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,2-Dibromoethane | ND (0.0490) | 0.0124 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,2-Dichlorobenzene | ND (0.0490) | 0.0070 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,2-Dichloroethane | ND (0.0490) | 0.0131 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,2-Dichloropropane | ND (0.0490) | 0.0128 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,3,5-Trimethylbenzene | J 0.0176 (0.0490) | 0.0086 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,3-Dichlorobenzene | ND (0.0490) | 0.0062 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,3-Dichloropropane | ND (0.0490) | 0.0110 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,4-Dichlorobenzene | ND (0.0490) | 0.0130 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1,4-Dioxane - Screen | ND (4.90) | 1.63 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 1-Chlorohexane | ND (0.0490) | 0.0093 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 2,2-Dichloropropane | ND (0.0979) | 0.0167 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 2-Butanone | ND (1.22) | 0.283 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 2-Chlorotoluene | ND (0.0490) | 0.0138 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 2-Hexanone | ND (0.490) | 0.0843 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 4-Chlorotoluene | ND (0.0490) | 0.0064 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 4-Isopropyltoluene | ND (0.0490) | 0.0087 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| 4-Methyl-2-Pentanone | ND (0.490) | 0.0589 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Acetone | ND (1.22) | 0.362 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Benzene | J 0.0490 (0.0490) | 0.0079 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Bromobenzene | ND (0.0490) | 0.0134 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-311d S-2
Date Sampled: 05/19/14 14:40
Percent Solids: 89
Initial Volume: 19.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0490) | 0.0159 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Bromodichloromethane | ND (0.0490) | 0.0068 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Bromoform | ND (0.0490) | 0.0141 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Bromomethane | ND (0.0979) | 0.0327 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Carbon Disulfide | ND (0.0490) | 0.0072 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Carbon Tetrachloride | ND (0.0490) | 0.0085 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Chlorobenzene | ND (0.0490) | 0.0077 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Chloroethane | ND (0.0979) | 0.0326 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Chloroform | B, J 0.0166 (0.0490) | 0.0101 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Chloromethane | ND (0.0979) | 0.0124 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| cis-1,2-Dichloroethene | ND (0.0490) | 0.0121 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| cis-1,3-Dichloropropene | ND (0.0490) | 0.0111 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Dibromochloromethane | ND (0.0490) | 0.0123 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Dibromomethane | ND (0.0490) | 0.0155 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Dichlorodifluoromethane | ND (0.0490) | 0.0085 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Diethyl Ether | ND (0.0490) | 0.0124 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Di-isopropyl ether | ND (0.0490) | 0.0092 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Ethyl tertiary-butyl ether | ND (0.0490) | 0.0123 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Ethylbenzene | J 0.0255 (0.0490) | 0.0064 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Hexachlorobutadiene | ND (0.0490) | 0.0163 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Isopropylbenzene | ND (0.0490) | 0.0086 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Methyl tert-Butyl Ether | ND (0.0490) | 0.0078 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Methylene Chloride | ND (0.245) | 0.0128 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Naphthalene | 0.270 (0.0490) | 0.0128 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| n-Butylbenzene | ND (0.0490) | 0.0120 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| n-Propylbenzene | ND (0.0490) | 0.0119 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| sec-Butylbenzene | ND (0.0490) | 0.0066 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Styrene | ND (0.0490) | 0.0065 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| tert-Butylbenzene | ND (0.0490) | 0.0115 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Tertiary-amyl methyl ether | ND (0.0490) | 0.0070 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Tetrachloroethene | ND (0.0490) | 0.0163 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Tetrahydrofuran | ND (0.490) | 0.126 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-311d S-2
 Date Sampled: 05/19/14 14:40
 Percent Solids: 89
 Initial Volume: 19.7
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405553
 ESS Laboratory Sample ID: 1405553-01
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | J 0.0401 (0.0490) | 0.0124 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| trans-1,2-Dichloroethene | ND (0.0490) | 0.0161 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| trans-1,3-Dichloropropene | ND (0.0490) | 0.0151 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Trichloroethene | ND (0.0490) | 0.0101 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Trichlorofluoromethane | ND (0.0490) | 0.0129 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Vinyl Acetate | ND (0.245) | 0.0101 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Vinyl Chloride | ND (0.0490) | 0.0162 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Xylene O | J 0.0186 (0.0490) | 0.0094 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Xylene P,M | J 0.0470 (0.0979) | 0.0190 | 8260B | | 1 | 05/27/14 14:01 | CXE0362 | CE42730 |
| Xylenes (Total) | ND (0.0979) | | 8260B | | 1 | 05/27/14 14:01 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 92 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 94 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 94 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 98 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-311d S-2
Date Sampled: 05/19/14 14:40
Percent Solids: 89
Initial Volume: 20.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/23/14 13:42

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 573 (41.9) | | 8100M | | 1 | 05/27/14 19:02 | CXE0364 | CE42245 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 88 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-311d S-2
 Date Sampled: 05/19/14 14:40
 Percent Solids: 89
 Initial Volume: 14.7
 Final Volume: 0.5
 Extraction Method: 3546

ESS Laboratory Work Order: 1405553
 ESS Laboratory Sample ID: 1405553-01
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: IBM
 Prepared: 5/23/14 13:42

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Acenaphthene | ND (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Acenaphthylene | 0.516 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Anthracene | 0.540 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Benzo(a)anthracene | 2.39 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Benzo(a)pyrene | 2.03 (0.191) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Benzo(b)fluoranthene | 3.30 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Benzo(g,h,i)perylene | 0.597 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Benzo(k)fluoranthene | 1.03 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Chrysene | 2.04 (0.191) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Dibenzo(a,h)Anthracene | 0.211 (0.191) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Fluoranthene | 3.57 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Fluorene | ND (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Indeno(1,2,3-cd)Pyrene | 0.586 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Naphthalene | 0.760 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Phenanthrene | 1.48 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |
| Pyrene | 2.34 (0.382) | | 8270C | | 1 | 05/28/14 11:49 | CXE0370 | CE42225 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 63 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 73 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 59 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 67 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-311d S-2
Date Sampled: 05/19/14 14:40
Percent Solids: 89

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-01
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.04) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-313d S-3
Date Sampled: 05/19/14 15:45
Percent Solids: 90

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.5) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Arsenic | 7.3 (2.2) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Beryllium | 0.28 (0.09) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Cadmium | ND (0.45) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Chromium | 6.3 (0.9) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Copper | 11.2 (2.2) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Lead | 6.6 (4.5) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Mercury | ND (0.034) | | 7471A | | 1 | JP | 05/28/14 12:32 | 0.64 | 40 | CE42706 |
| Nickel | 8.6 (2.2) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Selenium | ND (4.5) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Silver | ND (0.45) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |
| Thallium | ND (1.11) | | 7841 | | 5 | KJK | 05/29/14 3:11 | 2.48 | 100 | CE42705 |
| Zinc | 29.1 (2.2) | | 6010B | | 1 | KJK | 05/28/14 23:40 | 2.48 | 100 | CE42705 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-313d S-3
Date Sampled: 05/19/14 15:45
Percent Solids: 90
Initial Volume: 22.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0847) | 0.0074 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,1,1-Trichloroethane | ND (0.0423) | 0.0075 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,1,2,2-Tetrachloroethane | ND (0.0423) | 0.0115 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,1,2-Trichloroethane | ND (0.0423) | 0.0106 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,1-Dichloroethane | ND (0.0423) | 0.0068 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,1-Dichloroethene | ND (0.0423) | 0.0104 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,1-Dichloropropene | ND (0.0423) | 0.0065 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,2,3-Trichlorobenzene | ND (0.0423) | 0.0141 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,2,3-Trichloropropane | ND (0.0423) | 0.0105 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,2,4-Trichlorobenzene | ND (0.0423) | 0.0093 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,2,4-Trimethylbenzene | ND (0.0423) | 0.0081 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,2-Dibromo-3-Chloropropane | ND (0.254) | 0.0847 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,2-Dibromoethane | ND (0.0423) | 0.0108 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,2-Dichlorobenzene | ND (0.0423) | 0.0060 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,2-Dichloroethane | ND (0.0423) | 0.0113 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,2-Dichloropropane | ND (0.0423) | 0.0111 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,3,5-Trimethylbenzene | ND (0.0423) | 0.0075 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,3-Dichlorobenzene | ND (0.0423) | 0.0053 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,3-Dichloropropane | ND (0.0423) | 0.0095 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,4-Dichlorobenzene | ND (0.0423) | 0.0113 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1,4-Dioxane - Screen | ND (4.23) | 1.41 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 1-Chlorohexane | ND (0.0423) | 0.0080 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 2,2-Dichloropropane | ND (0.0847) | 0.0145 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 2-Butanone | ND (1.06) | 0.245 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 2-Chlorotoluene | ND (0.0423) | 0.0119 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 2-Hexanone | ND (0.423) | 0.0729 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 4-Chlorotoluene | ND (0.0423) | 0.0055 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 4-Isopropyltoluene | ND (0.0423) | 0.0075 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| 4-Methyl-2-Pentanone | ND (0.423) | 0.0510 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Acetone | ND (1.06) | 0.313 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Benzene | ND (0.0423) | 0.0069 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Bromobenzene | ND (0.0423) | 0.0116 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-313d S-3
Date Sampled: 05/19/14 15:45
Percent Solids: 90
Initial Volume: 22.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0423) | 0.0137 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Bromodichloromethane | ND (0.0423) | 0.0058 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Bromoform | ND (0.0423) | 0.0122 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Bromomethane | ND (0.0847) | 0.0283 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Carbon Disulfide | ND (0.0423) | 0.0063 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Carbon Tetrachloride | ND (0.0423) | 0.0074 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Chlorobenzene | ND (0.0423) | 0.0067 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Chloroethane | ND (0.0847) | 0.0282 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Chloroform | B, J 0.0152 (0.0423) | 0.0087 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Chloromethane | ND (0.0847) | 0.0108 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| cis-1,2-Dichloroethene | ND (0.0423) | 0.0105 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| cis-1,3-Dichloropropene | ND (0.0423) | 0.0096 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Dibromochloromethane | ND (0.0423) | 0.0107 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Dibromomethane | ND (0.0423) | 0.0134 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Dichlorodifluoromethane | ND (0.0423) | 0.0074 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Diethyl Ether | ND (0.0423) | 0.0108 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Di-isopropyl ether | ND (0.0423) | 0.0080 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Ethyl tertiary-butyl ether | ND (0.0423) | 0.0107 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Ethylbenzene | ND (0.0423) | 0.0055 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Hexachlorobutadiene | ND (0.0423) | 0.0141 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Isopropylbenzene | ND (0.0423) | 0.0075 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Methyl tert-Butyl Ether | ND (0.0423) | 0.0068 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Methylene Chloride | ND (0.212) | 0.0111 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Naphthalene | 0.0618 (0.0423) | 0.0111 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| n-Butylbenzene | J 0.0373 (0.0423) | 0.0104 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| n-Propylbenzene | ND (0.0423) | 0.0103 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| sec-Butylbenzene | J 0.0110 (0.0423) | 0.0057 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Styrene | ND (0.0423) | 0.0056 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| tert-Butylbenzene | ND (0.0423) | 0.0099 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Tertiary-amyl methyl ether | ND (0.0423) | 0.0061 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Tetrachloroethene | ND (0.0423) | 0.0141 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Tetrahydrofuran | ND (0.423) | 0.109 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-313d S-3
Date Sampled: 05/19/14 15:45
Percent Solids: 90
Initial Volume: 22.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0423) | 0.0108 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| trans-1,2-Dichloroethene | ND (0.0423) | 0.0139 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| trans-1,3-Dichloropropene | ND (0.0423) | 0.0130 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Trichloroethene | ND (0.0423) | 0.0087 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Trichlorofluoromethane | ND (0.0423) | 0.0112 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Vinyl Acetate | ND (0.212) | 0.0087 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Vinyl Chloride | ND (0.0423) | 0.0140 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Xylene O | ND (0.0423) | 0.0081 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Xylene P,M | ND (0.0847) | 0.0164 | 8260B | | 1 | 05/27/14 14:29 | CXE0362 | CE42730 |
| Xylenes (Total) | ND (0.0847) | | 8260B | | 1 | 05/27/14 14:29 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>102 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>104 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>105 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>108 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-313d S-3
Date Sampled: 05/19/14 15:45
Percent Solids: 90
Initial Volume: 19.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/23/14 13:42

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 590 (42.1) | | 8100M | | 1 | 05/27/14 19:42 | CXE0364 | CE42245 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 83 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-313d S-3
Date Sampled: 05/19/14 15:45
Percent Solids: 90
Initial Volume: 14.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/23/14 13:42

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Acenaphthene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Acenaphthylene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Anthracene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Benzo(a)anthracene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Benzo(a)pyrene | ND (0.192) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Benzo(b)fluoranthene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Benzo(g,h,i)perylene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Benzo(k)fluoranthene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Chrysene | ND (0.192) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Dibenzo(a,h)Anthracene | ND (0.192) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Fluoranthene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Fluorene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Indeno(1,2,3-cd)Pyrene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Naphthalene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Phenanthrene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |
| Pyrene | ND (0.383) | | 8270C | | 1 | 05/28/14 7:12 | CXE0370 | CE42225 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 73 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 78 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 73 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 94 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-313d S-3
Date Sampled: 05/19/14 15:45
Percent Solids: 90

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-02
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.08) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-051914
Date Sampled: 05/19/14 08:00
Percent Solids: 90

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.5) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |
| Arsenic | 8.6 (2.2) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |
| Beryllium | 0.31 (0.09) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |
| Cadmium | ND (0.45) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |
| Chromium | 6.7 (0.9) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |
| Copper | 12.3 (2.2) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |
| Lead | 8.2 (4.5) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |
| Mercury | ND (0.033) | | 7471A | | 1 | JP | 05/28/14 12:35 | 0.66 | 40 | CE42706 |
| Nickel | 8.6 (2.2) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |
| Selenium | ND (13.4) | | 6010B | | 3 | KJK | 05/29/14 15:30 | 2.49 | 100 | CE42705 |
| Silver | 0.46 (0.45) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |
| Thallium | ND (1.10) | | 7841 | | 5 | KJK | 05/29/14 3:17 | 2.49 | 100 | CE42705 |
| Zinc | 30.8 (2.2) | | 6010B | | 1 | KJK | 05/28/14 23:44 | 2.49 | 100 | CE42705 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-051914
Date Sampled: 05/19/14 08:00
Percent Solids: 90
Initial Volume: 23.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0830) | 0.0072 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,1,1-Trichloroethane | ND (0.0415) | 0.0073 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,1,2,2-Tetrachloroethane | ND (0.0415) | 0.0113 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,1,2-Trichloroethane | ND (0.0415) | 0.0104 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,1-Dichloroethane | ND (0.0415) | 0.0066 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,1-Dichloroethene | ND (0.0415) | 0.0102 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,1-Dichloropropene | ND (0.0415) | 0.0064 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,2,3-Trichlorobenzene | ND (0.0415) | 0.0139 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,2,3-Trichloropropane | ND (0.0415) | 0.0103 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,2,4-Trichlorobenzene | ND (0.0415) | 0.0091 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,2,4-Trimethylbenzene | ND (0.0415) | 0.0080 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,2-Dibromo-3-Chloropropane | ND (0.249) | 0.0830 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,2-Dibromoethane | ND (0.0415) | 0.0105 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,2-Dichlorobenzene | ND (0.0415) | 0.0059 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,2-Dichloroethane | ND (0.0415) | 0.0111 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,2-Dichloropropane | ND (0.0415) | 0.0109 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,3,5-Trimethylbenzene | ND (0.0415) | 0.0073 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,3-Dichlorobenzene | ND (0.0415) | 0.0052 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,3-Dichloropropane | ND (0.0415) | 0.0093 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,4-Dichlorobenzene | ND (0.0415) | 0.0110 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1,4-Dioxane - Screen | ND (4.15) | 1.39 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 1-Chlorohexane | ND (0.0415) | 0.0079 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 2,2-Dichloropropane | ND (0.0830) | 0.0142 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 2-Butanone | ND (1.04) | 0.240 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 2-Chlorotoluene | ND (0.0415) | 0.0117 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 2-Hexanone | ND (0.415) | 0.0715 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 4-Chlorotoluene | ND (0.0415) | 0.0054 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 4-Isopropyltoluene | ND (0.0415) | 0.0074 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| 4-Methyl-2-Pentanone | ND (0.415) | 0.0500 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Acetone | ND (1.04) | 0.307 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Benzene | ND (0.0415) | 0.0067 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Bromobenzene | ND (0.0415) | 0.0114 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-051914
Date Sampled: 05/19/14 08:00
Percent Solids: 90
Initial Volume: 23.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0415) | 0.0134 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Bromodichloromethane | ND (0.0415) | 0.0057 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Bromoform | ND (0.0415) | 0.0120 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Bromomethane | ND (0.0830) | 0.0277 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Carbon Disulfide | ND (0.0415) | 0.0061 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Carbon Tetrachloride | ND (0.0415) | 0.0072 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Chlorobenzene | ND (0.0415) | 0.0066 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Chloroethane | ND (0.0830) | 0.0276 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Chloroform | B, J 0.0149 (0.0415) | 0.0085 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Chloromethane | ND (0.0830) | 0.0105 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| cis-1,2-Dichloroethene | ND (0.0415) | 0.0103 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| cis-1,3-Dichloropropene | ND (0.0415) | 0.0094 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Dibromochloromethane | ND (0.0415) | 0.0105 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Dibromomethane | ND (0.0415) | 0.0131 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Dichlorodifluoromethane | ND (0.0415) | 0.0072 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Diethyl Ether | ND (0.0415) | 0.0105 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Di-isopropyl ether | ND (0.0415) | 0.0078 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Ethyl tertiary-butyl ether | ND (0.0415) | 0.0105 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Ethylbenzene | ND (0.0415) | 0.0054 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Hexachlorobutadiene | ND (0.0415) | 0.0139 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Isopropylbenzene | ND (0.0415) | 0.0073 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Methyl tert-Butyl Ether | ND (0.0415) | 0.0066 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Methylene Chloride | ND (0.207) | 0.0109 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Naphthalene | 0.0722 (0.0415) | 0.0109 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| n-Butylbenzene | J 0.0324 (0.0415) | 0.0102 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| n-Propylbenzene | ND (0.0415) | 0.0101 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| sec-Butylbenzene | ND (0.0415) | 0.0056 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Styrene | ND (0.0415) | 0.0055 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| tert-Butylbenzene | ND (0.0415) | 0.0097 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Tertiary-amyl methyl ether | ND (0.0415) | 0.0060 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Tetrachloroethene | ND (0.0415) | 0.0139 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Tetrahydrofuran | ND (0.415) | 0.107 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-051914
Date Sampled: 05/19/14 08:00
Percent Solids: 90
Initial Volume: 23.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0415) | 0.0105 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| trans-1,2-Dichloroethene | ND (0.0415) | 0.0136 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| trans-1,3-Dichloropropene | ND (0.0415) | 0.0128 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Trichloroethene | ND (0.0415) | 0.0085 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Trichlorofluoromethane | ND (0.0415) | 0.0110 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Vinyl Acetate | ND (0.207) | 0.0085 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Vinyl Chloride | ND (0.0415) | 0.0137 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Xylene O | ND (0.0415) | 0.0080 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Xylene P,M | ND (0.0830) | 0.0161 | 8260B | | 1 | 05/27/14 14:57 | CXE0362 | CE42730 |
| Xylenes (Total) | ND (0.0830) | | 8260B | | 1 | 05/27/14 14:57 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>105 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>108 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>107 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>109 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-051914
Date Sampled: 05/19/14 08:00
Percent Solids: 90
Initial Volume: 19.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/23/14 13:42

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 436 (42.1) | | 8100M | | 1 | 05/27/14 20:20 | CXE0364 | CE42245 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 83 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-051914
Date Sampled: 05/19/14 08:00
Percent Solids: 90
Initial Volume: 14.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/23/14 13:42

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Acenaphthene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Acenaphthylene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Anthracene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Benzo(a)anthracene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Benzo(a)pyrene | ND (0.191) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Benzo(b)fluoranthene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Benzo(g,h,i)perylene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Benzo(k)fluoranthene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Chrysene | ND (0.191) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Dibenzo(a,h)Anthracene | ND (0.191) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Fluoranthene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Fluorene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Indeno(1,2,3-cd)Pyrene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Naphthalene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Phenanthrene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |
| Pyrene | ND (0.380) | | 8270C | | 1 | 05/28/14 7:47 | CXE0370 | CE42225 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 73 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 79 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 74 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 96 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-051914
Date Sampled: 05/19/14 08:00
Percent Solids: 90

ESS Laboratory Work Order: 1405553
ESS Laboratory Sample ID: 1405553-03
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.04) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42705 - 3050B

Blank

| | | | |
|-----------|----|------|-----------|
| Antimony | ND | 5.0 | mg/kg wet |
| Arsenic | ND | 2.5 | mg/kg wet |
| Beryllium | ND | 0.10 | mg/kg wet |
| Cadmium | ND | 0.50 | mg/kg wet |
| Chromium | ND | 1.0 | mg/kg wet |
| Copper | ND | 2.5 | mg/kg wet |
| Lead | ND | 5.0 | mg/kg wet |
| Nickel | ND | 2.5 | mg/kg wet |
| Selenium | ND | 5.0 | mg/kg wet |
| Silver | ND | 0.50 | mg/kg wet |
| Thallium | ND | 0.25 | mg/kg wet |
| Zinc | ND | 2.5 | mg/kg wet |

LCS

| | | | | | | |
|-----------|------|------|-----------|-------|----|--------|
| Antimony | 106 | 15.2 | mg/kg wet | 116.0 | 91 | 80-120 |
| Arsenic | 114 | 7.6 | mg/kg wet | 122.0 | 94 | 80-120 |
| Beryllium | 47.0 | 0.32 | mg/kg wet | 54.30 | 87 | 80-120 |
| Cadmium | 75.4 | 1.52 | mg/kg wet | 88.00 | 86 | 80-120 |
| Chromium | 86.6 | 3.0 | mg/kg wet | 102.0 | 85 | 80-120 |
| Copper | 66.7 | 7.6 | mg/kg wet | 78.00 | 86 | 80-120 |
| Lead | 77.6 | 15.2 | mg/kg wet | 94.50 | 82 | 80-120 |
| Nickel | 51.7 | 7.6 | mg/kg wet | 56.30 | 92 | 80-120 |
| Selenium | 129 | 15.2 | mg/kg wet | 157.0 | 82 | 80-120 |
| Silver | 31.9 | 1.52 | mg/kg wet | 34.20 | 93 | 80-120 |
| Thallium | 109 | 37.5 | mg/kg wet | 116.0 | 94 | 80-120 |
| Zinc | 174 | 7.6 | mg/kg wet | 207.0 | 84 | 80-120 |

LCS Dup

| | | | | | | | | |
|-----------|------|------|-----------|-------|----|--------|-----|----|
| Antimony | 104 | 14.9 | mg/kg wet | 116.0 | 90 | 80-120 | 2 | 20 |
| Arsenic | 115 | 7.5 | mg/kg wet | 122.0 | 94 | 80-120 | 0.5 | 20 |
| Beryllium | 46.9 | 0.31 | mg/kg wet | 54.30 | 86 | 80-120 | 0.2 | 20 |
| Cadmium | 75.3 | 1.50 | mg/kg wet | 88.00 | 86 | 80-120 | 0.2 | 20 |
| Chromium | 87.5 | 3.0 | mg/kg wet | 102.0 | 86 | 80-120 | 1 | 20 |
| Copper | 66.5 | 7.5 | mg/kg wet | 78.00 | 85 | 80-120 | 0.3 | 20 |
| Lead | 78.6 | 14.9 | mg/kg wet | 94.50 | 83 | 80-120 | 1 | 20 |
| Nickel | 51.1 | 7.5 | mg/kg wet | 56.30 | 91 | 80-120 | 1 | 20 |
| Selenium | 130 | 14.9 | mg/kg wet | 157.0 | 83 | 80-120 | 0.2 | 20 |
| Silver | 32.0 | 1.50 | mg/kg wet | 34.20 | 94 | 80-120 | 0.4 | 20 |
| Thallium | 103 | 36.9 | mg/kg wet | 116.0 | 89 | 80-120 | 6 | 20 |
| Zinc | 175 | 7.5 | mg/kg wet | 207.0 | 84 | 80-120 | 0.3 | 20 |

Batch CE42706 - 7471A

Blank

| | | | |
|---------|----|-------|-----------|
| Mercury | ND | 0.033 | mg/kg wet |
|---------|----|-------|-----------|

LCS

| | | | | | | |
|---------|------|------|-----------|-------|----|--------|
| Mercury | 3.88 | 1.60 | mg/kg wet | 3.980 | 98 | 80-120 |
|---------|------|------|-----------|-------|----|--------|



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42706 - 7471A

LCS Dup

| | | | | | | | | | | |
|---------|------|------|-----------|-------|--|-----|--------|---|----|--|
| Mercury | 4.05 | 1.52 | mg/kg wet | 3.980 | | 102 | 80-120 | 4 | 20 | |
|---------|------|------|-----------|-------|--|-----|--------|---|----|--|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

Blank

| | | | |
|-----------------------------|----|--------|-----------|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet |
| 2-Butanone | ND | 1.25 | mg/kg wet |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet |
| 2-Hexanone | ND | 0.500 | mg/kg wet |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet |
| Acetone | ND | 1.25 | mg/kg wet |
| Benzene | ND | 0.0500 | mg/kg wet |
| Bromobenzene | ND | 0.0500 | mg/kg wet |
| Bromochloromethane | ND | 0.0500 | mg/kg wet |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet |
| Bromoform | ND | 0.0500 | mg/kg wet |
| Bromomethane | ND | 0.100 | mg/kg wet |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet |
| Chlorobenzene | ND | 0.0500 | mg/kg wet |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|----|--------|--|--|---|
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0130 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.18 | | mg/kg wet | 2.500 | | 87 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.19 | | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.22 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |

LCS

| | | | | | | | | | | |
|---------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.55 | 0.100 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1-Dichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1-Dichloroethene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,1-Dichloropropene | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,2,3-Trichlorobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.57 | 0.300 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,2-Dibromoethane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,2-Dichloroethane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dichloropropane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,3-Dichloropropane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,4-Dioxane - Screen | 59.9 | 5.00 | mg/kg wet | 50.00 | | 120 | 44-241 | | | |
| 1-Chlorohexane | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 2,2-Dichloropropane | 2.65 | 0.100 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 2-Butanone | 12.2 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| 2-Chlorotoluene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 2-Hexanone | 12.3 | 0.500 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| 4-Chlorotoluene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 4-Isopropyltoluene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.4 | 0.500 | mg/kg wet | 12.50 | | 99 | 70-130 | | | |
| Acetone | 12.5 | 1.25 | mg/kg wet | 12.50 | | 100 | 70-130 | | | |
| Benzene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| Bromobenzene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Bromochloromethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromodichloromethane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromoform | 2.81 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| Bromomethane | 2.41 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Carbon Disulfide | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Carbon Tetrachloride | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Chlorobenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Chloroethane | 2.52 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Chloroform | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Chloromethane | 2.30 | 0.100 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| Dibromochloromethane | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Dibromomethane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Dichlorodifluoromethane | 1.99 | 0.0500 | mg/kg wet | 2.500 | | 80 | 70-130 | | | |
| Diethyl Ether | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Di-isopropyl ether | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Ethylbenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Hexachlorobutadiene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Isopropylbenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Methylene Chloride | 2.46 | 0.250 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Naphthalene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| n-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| n-Propylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| sec-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Styrene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| tert-Butylbenzene | 2.93 | 0.0500 | mg/kg wet | 2.500 | | 117 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Tetrachloroethene | 1.90 | 0.0500 | mg/kg wet | 2.500 | | 76 | 70-130 | | | |
| Tetrahydrofuran | 2.43 | 0.500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Toluene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Trichloroethene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Vinyl Acetate | 2.87 | 0.250 | mg/kg wet | 2.500 | | 115 | 70-130 | | | |
| Vinyl Chloride | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Xylene O | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Xylene P,M | 5.32 | 0.100 | mg/kg wet | 5.000 | | 106 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.27 | | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.24 | | mg/kg wet | 2.500 | | 90 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.29 | | mg/kg wet | 2.500 | | 92 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|------|----|--|
| 1,1,1,2-Tetrachloroethane | 2.51 | 0.100 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| 1,1,1-Trichloroethane | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.6 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 5 | 25 | |
| 1,1,2-Trichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| 1,1-Dichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.08 | 25 | |
| 1,1-Dichloroethene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.1 | 25 | |
| 1,1-Dichloropropene | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.6 | 25 | |
| 1,2,3-Trichlorobenzene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 2 | 25 | |
| 1,2,3-Trichloropropane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 5 | 25 | |
| 1,2,4-Trichlorobenzene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 0.9 | 25 | |
| 1,2,4-Trimethylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.08 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.46 | 0.300 | mg/kg wet | 2.500 | | 99 | 70-130 | 4 | 25 | |
| 1,2-Dibromoethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| 1,2-Dichlorobenzene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 2 | 25 | |
| 1,2-Dichloroethane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.5 | 25 | |
| 1,2-Dichloropropane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.3 | 25 | |
| 1,3,5-Trimethylbenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.8 | 25 | |
| 1,3-Dichlorobenzene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.7 | 25 | |
| 1,3-Dichloropropane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| 1,4-Dichlorobenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|------|-----|--|
| 1,4-Dioxane - Screen | 58.4 | 5.00 | mg/kg wet | 50.00 | | 117 | 44-241 | 3 | 200 | |
| 1-Chlorohexane | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 3 | 25 | |
| 2,2-Dichloropropane | 2.59 | 0.100 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| 2-Butanone | 11.8 | 1.25 | mg/kg wet | 12.50 | | 94 | 70-130 | 4 | 25 | |
| 2-Chlorotoluene | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 5 | 25 | |
| 2-Hexanone | 11.6 | 0.500 | mg/kg wet | 12.50 | | 93 | 70-130 | 6 | 25 | |
| 4-Chlorotoluene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| 4-Isopropyltoluene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.08 | 25 | |
| 4-Methyl-2-Pentanone | 12.1 | 0.500 | mg/kg wet | 12.50 | | 96 | 70-130 | 3 | 25 | |
| Acetone | 12.3 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | 2 | 25 | |
| Benzene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 0.5 | 25 | |
| Bromobenzene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 0.1 | 25 | |
| Bromochloromethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| Bromodichloromethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.3 | 25 | |
| Bromoform | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 3 | 25 | |
| Bromomethane | 2.33 | 0.100 | mg/kg wet | 2.500 | | 93 | 70-130 | 4 | 25 | |
| Carbon Disulfide | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| Carbon Tetrachloride | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.6 | 25 | |
| Chlorobenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.8 | 25 | |
| Chloroethane | 2.33 | 0.100 | mg/kg wet | 2.500 | | 93 | 70-130 | 8 | 25 | |
| Chloroform | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.9 | 25 | |
| Chloromethane | 2.29 | 0.100 | mg/kg wet | 2.500 | | 91 | 70-130 | 0.5 | 25 | |
| cis-1,2-Dichloroethene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| cis-1,3-Dichloropropene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 0.07 | 25 | |
| Dibromochloromethane | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.5 | 25 | |
| Dibromomethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.4 | 25 | |
| Dichlorodifluoromethane | 1.94 | 0.0500 | mg/kg wet | 2.500 | | 78 | 70-130 | 2 | 25 | |
| Diethyl Ether | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| Di-isopropyl ether | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.08 | 25 | |
| Ethyl tertiary-butyl ether | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.1 | 25 | |
| Ethylbenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.5 | 25 | |
| Hexachlorobutadiene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 4 | 25 | |
| Isopropylbenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.8 | 25 | |
| Methyl tert-Butyl Ether | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| Methylene Chloride | 2.49 | 0.250 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| Naphthalene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 1 | 25 | |
| n-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.2 | 25 | |
| n-Propylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| sec-Butylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.2 | 25 | |
| Styrene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.4 | 25 | |
| tert-Butylbenzene | 2.95 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | 0.7 | 25 | |
| Tertiary-amyl methyl ether | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| Tetrachloroethene | 1.88 | 0.0500 | mg/kg wet | 2.500 | | 75 | 70-130 | 0.6 | 25 | |
| Tetrahydrofuran | 2.81 | 0.500 | mg/kg wet | 2.500 | | 112 | 70-130 | 15 | 25 | |
| Toluene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 2 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE42730 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| trans-1,2-Dichloroethene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.7 | 25 | |
| trans-1,3-Dichloropropene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 1 | 25 | |
| Trichloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| Vinyl Acetate | 2.79 | 0.250 | mg/kg wet | 2.500 | | 112 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 1 | 25 | |
| Xylene O | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| Xylene P,M | 5.33 | 0.100 | mg/kg wet | 5.000 | | 107 | 70-130 | 0.2 | 25 | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.21 | | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.25 | | mg/kg wet | 2.500 | | 90 | 70-130 | | | |

8100M Total Petroleum Hydrocarbons

Batch CE42245 - 3546

| Blank | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacontane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |
| Surrogate: O-Terphenyl | 3.76 | | mg/kg wet | 5.000 | | 75 | 40-140 | | | |

| LCS | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | 1.8 | 0.2 | mg/kg wet | 2.500 | | 73 | 40-140 | | | |
| Docosane (C22) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | | | |
| Dodecane (C12) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 81 | 40-140 | | | |
| Eicosane (C20) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | | | |
| Hexacosane (C26) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | | | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 83 | 40-140 | | | |
| Nonadecane (C19) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |
| Nonane (C9) | 1.6 | 0.2 | mg/kg wet | 2.500 | | 66 | 30-140 | | | |
| Octacosane (C28) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | | | |
| Octadecane (C18) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |
| Tetracosane (C24) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | | | |
| Tetradecane (C14) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 80 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 32.7 | 37.5 | mg/kg wet | 35.00 | | 93 | 40-140 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8100M Total Petroleum Hydrocarbons

Batch CE42245 - 3546

| | | | | | | | | | | |
|-------------------------------|------|-----|-----------|-------|--|----|--------|--|--|--|
| Triacontane (C30) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | | | |
| <i>Surrogate: O-Terphenyl</i> | 3.87 | | mg/kg wet | 5.000 | | 77 | 40-140 | | | |

LCS Dup

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|----|--------|---|----|--|
| Decane (C10) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 77 | 40-140 | 4 | 25 | |
| Docosane (C22) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | 2 | 25 | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | 4 | 25 | |
| Eicosane (C20) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | 3 | 25 | |
| Hexacosane (C26) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | 3 | 25 | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | 3 | 25 | |
| Nonadecane (C19) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | 9 | 25 | |
| Nonane (C9) | 1.7 | 0.2 | mg/kg wet | 2.500 | | 67 | 30-140 | 3 | 25 | |
| Octacosane (C28) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 98 | 40-140 | 3 | 25 | |
| Octadecane (C18) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 93 | 40-140 | 4 | 25 | |
| Tetracosane (C24) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 98 | 40-140 | 3 | 25 | |
| Tetradecane (C14) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 83 | 40-140 | 3 | 25 | |
| Total Petroleum Hydrocarbons | 33.7 | 37.5 | mg/kg wet | 35.00 | | 96 | 40-140 | 3 | 25 | |
| Triacontane (C30) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 99 | 40-140 | 3 | 25 | |

| | | | | | | | | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|
| <i>Surrogate: O-Terphenyl</i> | 4.12 | | mg/kg wet | 5.000 | | 82 | 40-140 | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42225 - 3546

Blank

| | | | | | | | | | | |
|--|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)pyrene | ND | 0.167 | mg/kg wet | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Chrysene | ND | 0.167 | mg/kg wet | | | | | | | |
| Dibenzo(a,h)Anthracene | ND | 0.167 | mg/kg wet | | | | | | | |
| Fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Fluorene | ND | 0.333 | mg/kg wet | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Phenanthrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 2.70 | | mg/kg wet | 3.333 | | 81 | 30-130 | | | |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 2.91 | | mg/kg wet | 3.333 | | 87 | 30-130 | | | |
| <i>Surrogate: Nitrobenzene-d5</i> | 2.57 | | mg/kg wet | 3.333 | | 77 | 30-130 | | | |
| <i>Surrogate: p-Terphenyl-d14</i> | 4.01 | | mg/kg wet | 3.333 | | 120 | 30-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42225 - 3546

LCS

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | 2.39 | 0.333 | mg/kg wet | 3.333 | | 72 | 40-140 | | | |
| Acenaphthene | 2.37 | 0.333 | mg/kg wet | 3.333 | | 71 | 40-140 | | | |
| Acenaphthylene | 2.35 | 0.333 | mg/kg wet | 3.333 | | 71 | 40-140 | | | |
| Anthracene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | | | |
| Benzo(a)anthracene | 2.91 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Benzo(a)pyrene | 2.79 | 0.167 | mg/kg wet | 3.333 | | 84 | 40-140 | | | |
| Benzo(b)fluoranthene | 3.28 | 0.333 | mg/kg wet | 3.333 | | 98 | 40-140 | | | |
| Benzo(g,h,i)perylene | 3.07 | 0.333 | mg/kg wet | 3.333 | | 92 | 40-140 | | | |
| Benzo(k)fluoranthene | 2.93 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | | | |
| Chrysene | 2.85 | 0.167 | mg/kg wet | 3.333 | | 85 | 40-140 | | | |
| Dibenzo(a,h)Anthracene | 3.41 | 0.167 | mg/kg wet | 3.333 | | 102 | 40-140 | | | |
| Fluoranthene | 3.07 | 0.333 | mg/kg wet | 3.333 | | 92 | 40-140 | | | |
| Fluorene | 2.65 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | | | |
| Indeno(1,2,3-cd)Pyrene | 3.38 | 0.333 | mg/kg wet | 3.333 | | 101 | 40-140 | | | |
| Naphthalene | 2.29 | 0.333 | mg/kg wet | 3.333 | | 69 | 40-140 | | | |
| Phenanthrene | 2.69 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Pyrene | 2.91 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.55 | | mg/kg wet | 3.333 | | 76 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 2.77 | | mg/kg wet | 3.333 | | 83 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.47 | | mg/kg wet | 3.333 | | 74 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.73 | | mg/kg wet | 3.333 | | 112 | 30-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|------|----|--|
| 2-Methylnaphthalene | 2.42 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | 1 | 30 | |
| Acenaphthene | 2.43 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | 2 | 30 | |
| Acenaphthylene | 2.46 | 0.333 | mg/kg wet | 3.333 | | 74 | 40-140 | 4 | 30 | |
| Anthracene | 2.60 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | 1 | 30 | |
| Benzo(a)anthracene | 2.94 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | 0.9 | 30 | |
| Benzo(a)pyrene | 2.76 | 0.167 | mg/kg wet | 3.333 | | 83 | 40-140 | 1 | 30 | |
| Benzo(b)fluoranthene | 3.23 | 0.333 | mg/kg wet | 3.333 | | 97 | 40-140 | 1 | 30 | |
| Benzo(g,h,i)perylene | 3.05 | 0.333 | mg/kg wet | 3.333 | | 92 | 40-140 | 0.4 | 30 | |
| Benzo(k)fluoranthene | 2.90 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | 0.9 | 30 | |
| Chrysene | 2.88 | 0.167 | mg/kg wet | 3.333 | | 86 | 40-140 | 1 | 30 | |
| Dibenzo(a,h)Anthracene | 3.43 | 0.167 | mg/kg wet | 3.333 | | 103 | 40-140 | 0.4 | 30 | |
| Fluoranthene | 3.02 | 0.333 | mg/kg wet | 3.333 | | 91 | 40-140 | 2 | 30 | |
| Fluorene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | 0.7 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 3.39 | 0.333 | mg/kg wet | 3.333 | | 102 | 40-140 | 0.5 | 30 | |
| Naphthalene | 2.44 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | 6 | 30 | |
| Phenanthrene | 2.68 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 0.07 | 30 | |
| Pyrene | 2.99 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | 3 | 30 | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.50 | | mg/kg wet | 3.333 | | 75 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 2.78 | | mg/kg wet | 3.333 | | 83 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.43 | | mg/kg wet | 3.333 | | 73 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.69 | | mg/kg wet | 3.333 | | 111 | 30-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Classical Chemistry

Batch CE42823 - TCN Prep

Blank

| | | | | | | | | | | |
|---------------|----|------|-----------|--|--|--|--|--|--|--|
| Total Cyanide | ND | 0.02 | mg/kg wet | | | | | | | |
|---------------|----|------|-----------|--|--|--|--|--|--|--|

LCS

| | | | | | | | | | | |
|---------------|------|------|-----------|--------|--|-----|--------|--|--|--|
| Total Cyanide | 0.11 | 0.02 | mg/kg wet | 0.1003 | | 105 | 90-110 | | | |
|---------------|------|------|-----------|--------|--|-----|--------|--|--|--|

Reference

| | | | | | | | | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|
| Total Cyanide | 109 | 4.93 | mg/kg wet | 101.0 | | 108 | 31-168 | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|

Reference

| | | | | | | | | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|
| Total Cyanide | 110 | 4.92 | mg/kg wet | 101.0 | | 109 | 31-168 | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

Notes and Definitions

- U Analyte included in the analysis, but not detected
- J Reported between MDL and MRL
- D Diluted.
- B Present in Method Blank (B).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405553

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 14050553
Date Project Due: 5/30/14
Days For Project: 5 Day

Items to be checked upon receipt:

- | | | | |
|--|-------------------------------|---|---|
| 1. Air Bill Manifest Present? | <input type="checkbox"/> * No | 10. Are the samples properly preserved? | <input type="checkbox"/> Yes |
| Air No.: | | 11. Proper sample containers used? | <input type="checkbox"/> Yes |
| 2. Were Custody Seals Present? | <input type="checkbox"/> No | 12. Any air bubbles in the VOA vials? | <input type="checkbox"/> N/A |
| 3. Were Custody Seals Intact? | <input type="checkbox"/> N/A | 13. Holding times exceeded? | <input type="checkbox"/> No |
| 4. Is Radiation count < 100 CPM? | <input type="checkbox"/> Yes | 14. Sufficient sample volumes? | <input type="checkbox"/> Yes |
| 5. Is a cooler present? | <input type="checkbox"/> Yes | 15. Any Subcontracting needed? | <input type="checkbox"/> No |
| Cooler Temp: <u>2.7</u> | | 16. Are ESS labels on correct containers? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Iced With: <u>Ice</u> | | 17. Were samples received intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Was COC included with samples? | <input type="checkbox"/> Yes | ESS Sample IDs: _____ | |
| 7. Was COC signed and dated by client? | <input type="checkbox"/> Yes | Sub Lab: _____ | |
| 8. Does the COC match the sample | <input type="checkbox"/> Yes | Analysis: _____ | |
| 9. Is COC complete and correct? | <input type="checkbox"/> Yes | TAT: _____ | |

18. Was there need to call project manager to discuss status? If yes, please explain.

OFF HOLD
Re-log of 1405429-11, -14, -15
CS 5/23/14

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 8 oz Soil Jar | 1 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 8 oz Soil Jar | 1 | NP |
| 3 | Yes | 40 ml - VOA | 1 | MeOH |
| 3 | Yes | 8 oz Soil Jar | 1 | NP |

Completed By: [Signature]
Reviewed By: [Signature]

Date/Time: 5/23/14 1219
Date/Time: 5/23/14 1236

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

| | | | |
|--|-------------------|--|--------------------------------------|
| Turn Time If faster than 5 days, prior approval by laboratory is required # | Standard Other | Reporting Limits | ESS LAB PROJECT ID <u>1405429</u> |
| State where samples were collected from: MA <input checked="" type="radio"/> CT NH NJ NY ME Other | | Electronic Deliverable Yes <input checked="" type="checkbox"/> No | |
| Is this project for any of the following: MA-MCP Navy USACE Other | | Format: Excel <input checked="" type="checkbox"/> Access PDF <input checked="" type="checkbox"/> Other | |

| ESS LAB Sample # | Date | Collection Time | CONP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | Write Required Analysis |
|------------------|---------|-----------------|------|------|--------|--|-----------|----------------------|--------------------|--|
| 10 | 5-19-14 | 14:15 | | X | S | 62-311d S-1 | 116 | 2 | 46 | VOLs 503SA/2060B PAH 3550B/8210C PP-13 Metals 601700B total cyanide 900B TPH 8100M |
| 11 | | 14:40 | | | | 62-311d S-2 | | | | X X X X |
| 12 | | 15:15 | | | | 62-313d S-1 | | | | |
| 13 | | 15:30 | | | | 62-313d S-2 | | | | X X X X |
| 14 | | 15:45 | | | | 62-317d S-3 | | | | X X X X |
| 15 | | 09:00 | | | | BD-051914 | | | | X X X X |

①
②
③

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present Yes No Internal Use Only

Seals Intact Yes No NA: Pickup

Cooler Temp: 2.7 i a m [] Technicians

Preservation Code 1- NP, 2- HCl, 3- H₂SO₄, 4- HNO₃, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- Zn Act, 9- _____

Sampled by: Sophia Nockiewicz / Matt Segon

Comments: HOLD ALL SAMPLES - at 5/23/14 Sample # 10 has sample ID # 11 but time matches

| | | | | | | | |
|--|----------------------------|--|----------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <i>[Signature]</i> | Date/Time 5/19/14 17:10 | Received by: (Signature) <i>[Signature]</i> | Date/Time 5/19/14 17:10 | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |



CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554.00 T-23)
ESS Laboratory Work Order Number: 1405579

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 3:22 pm, Jun 03, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

SAMPLE RECEIPT

The following samples were received on May 27, 2014 for the analyses specified on the enclosed Chain of Custody Record.

These samples were originally received on hold on May 21, 2014.

| <u>Lab Number</u> | <u>Sample Name</u> | <u>Matrix</u> | <u>Analysis</u> |
|-------------------|--------------------|---------------|---|
| 1405579-01 | GZ-306s S-2 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405579-02 | GZ-305s S-1B | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405579-03 | GZ-304d S-2 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405579-04 | Trip Blank | Soil | 8260B |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

1405579-01 [Present in Method Blank \(B\).](#)

Chloroform

1405579-02 [Present in Method Blank \(B\).](#)

Chlorobenzene

1405579-03 [Present in Method Blank \(B\).](#)

Chloroform

8270C Polynuclear Aromatic Hydrocarbons

1405579-01 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)

1405579-03 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-306s S-2
Date Sampled: 05/21/14 10:50
Percent Solids: 84

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | 9.1 (4.8) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Arsenic | 81.9 (2.4) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Beryllium | 0.44 (0.10) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Cadmium | 2.88 (0.48) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Chromium | 5.9 (1.0) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Copper | 233 (2.4) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Lead | 245 (4.8) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Mercury | 0.415 (0.037) | | 7471A | | 1 | JP | 05/28/14 14:00 | 0.63 | 40 | CE42706 |
| Nickel | 10.5 (2.4) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Selenium | ND (4.8) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Silver | 1.16 (0.48) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |
| Thallium | 2.05 (1.18) | | 7841 | | 5 | SVD | 05/30/14 1:43 | 2.48 | 100 | CE42801 |
| Zinc | 97.5 (2.4) | | 6010B | | 1 | KJK | 05/29/14 9:28 | 2.48 | 100 | CE42801 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-306s S-2
Date Sampled: 05/21/14 10:50
Percent Solids: 84
Initial Volume: 13.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|-----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.153) | 0.0133 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,1,1-Trichloroethane | ND (0.0765) | 0.0135 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,1,2,2-Tetrachloroethane | ND (0.0765) | 0.0208 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,1,2-Trichloroethane | ND (0.0765) | 0.0191 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,1-Dichloroethane | ND (0.0765) | 0.0122 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,1-Dichloroethene | ND (0.0765) | 0.0188 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,1-Dichloropropene | ND (0.0765) | 0.0118 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,2,3-Trichlorobenzene | ND (0.0765) | 0.0256 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,2,3-Trichloropropane | ND (0.0765) | 0.0190 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,2,4-Trichlorobenzene | ND (0.0765) | 0.0168 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,2,4-Trimethylbenzene | 0.911 (0.0765) | 0.0147 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,2-Dibromo-3-Chloropropane | ND (0.459) | 0.153 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,2-Dibromoethane | ND (0.0765) | 0.0194 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,2-Dichlorobenzene | ND (0.0765) | 0.0109 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,2-Dichloroethane | ND (0.0765) | 0.0205 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,2-Dichloropropane | ND (0.0765) | 0.0200 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,3,5-Trimethylbenzene | 0.990 (0.0765) | 0.0135 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,3-Dichlorobenzene | ND (0.0765) | 0.0096 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,3-Dichloropropane | ND (0.0765) | 0.0171 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,4-Dichlorobenzene | ND (0.0765) | 0.0204 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1,4-Dioxane - Screen | ND (7.65) | 2.56 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 1-Chlorohexane | ND (0.0765) | 0.0145 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 2,2-Dichloropropane | ND (0.153) | 0.0262 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 2-Butanone | ND (1.91) | 0.442 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 2-Chlorotoluene | ND (0.0765) | 0.0216 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 2-Hexanone | ND (0.765) | 0.132 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 4-Chlorotoluene | ND (0.0765) | 0.0099 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 4-Isopropyltoluene | 0.110 (0.0765) | 0.0136 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| 4-Methyl-2-Pentanone | ND (0.765) | 0.0921 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Acetone | ND (1.91) | 0.566 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Benzene | 0.234 (0.0765) | 0.0124 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Bromobenzene | ND (0.0765) | 0.0210 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-306s S-2
Date Sampled: 05/21/14 10:50
Percent Solids: 84
Initial Volume: 13.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0765) | 0.0248 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Bromodichloromethane | ND (0.0765) | 0.0106 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Bromoform | ND (0.0765) | 0.0220 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Bromomethane | ND (0.153) | 0.0511 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Carbon Disulfide | ND (0.0765) | 0.0113 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Carbon Tetrachloride | ND (0.0765) | 0.0133 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Chlorobenzene | ND (0.0765) | 0.0121 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Chloroethane | ND (0.153) | 0.0510 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Chloroform | B, J 0.0291 (0.0765) | 0.0158 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Chloromethane | ND (0.153) | 0.0194 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| cis-1,2-Dichloroethene | ND (0.0765) | 0.0190 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| cis-1,3-Dichloropropene | ND (0.0765) | 0.0173 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Dibromochloromethane | ND (0.0765) | 0.0193 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Dibromomethane | ND (0.0765) | 0.0242 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Dichlorodifluoromethane | ND (0.0765) | 0.0133 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Diethyl Ether | ND (0.0765) | 0.0194 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Di-isopropyl ether | ND (0.0765) | 0.0144 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Ethyl tertiary-butyl ether | ND (0.0765) | 0.0193 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Ethylbenzene | 0.315 (0.0765) | 0.0099 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Hexachlorobutadiene | ND (0.0765) | 0.0256 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Isopropylbenzene | 0.110 (0.0765) | 0.0135 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Methyl tert-Butyl Ether | ND (0.0765) | 0.0122 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Methylene Chloride | ND (0.383) | 0.0200 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Naphthalene | 5.61 (0.0765) | 0.0200 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| n-Butylbenzene | ND (0.0765) | 0.0188 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| n-Propylbenzene | 0.165 (0.0765) | 0.0187 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| sec-Butylbenzene | 0.132 (0.0765) | 0.0103 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Styrene | ND (0.0765) | 0.0101 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| tert-Butylbenzene | ND (0.0765) | 0.0179 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Tertiary-amyl methyl ether | ND (0.0765) | 0.0110 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Tetrachloroethene | ND (0.0765) | 0.0256 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Tetrahydrofuran | ND (0.765) | 0.197 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-306s S-2
Date Sampled: 05/21/14 10:50
Percent Solids: 84
Initial Volume: 13.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|-----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.474 (0.0765) | 0.0194 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| trans-1,2-Dichloroethene | ND (0.0765) | 0.0251 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| trans-1,3-Dichloropropene | ND (0.0765) | 0.0236 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Trichloroethene | ND (0.0765) | 0.0158 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Trichlorofluoromethane | ND (0.0765) | 0.0202 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Vinyl Acetate | ND (0.383) | 0.0158 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Vinyl Chloride | ND (0.0765) | 0.0252 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Xylene O | 0.436 (0.0765) | 0.0147 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Xylene P,M | 0.866 (0.153) | 0.0297 | 8260B | | 1 | 05/30/14 16:23 | CXE0430 | CE43040 |
| Xylenes (Total) | 1.30 (0.153) | | 8260B | | 1 | 05/30/14 16:23 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 98 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 99 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 103 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 108 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-306s S-2
Date Sampled: 05/21/14 10:50
Percent Solids: 84
Initial Volume: 20
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/27/14 15:35

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 4250 (444) | | 8100M | | 10 | 05/28/14 8:07 | CXE0364 | CE42721 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 95 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-306s S-2
Date Sampled: 05/21/14 10:50
Percent Solids: 84
Initial Volume: 14.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/27/14 15:35

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | 10.8 (2.08) | | 8270C | | 5 | 05/29/14 11:55 | CXE0398 | CE42722 |
| Acenaphthene | ND (2.08) | | 8270C | | 5 | 05/29/14 11:55 | CXE0398 | CE42722 |
| Acenaphthylene | 30.3 (2.08) | | 8270C | | 5 | 05/29/14 11:55 | CXE0398 | CE42722 |
| Anthracene | 28.1 (2.08) | | 8270C | | 5 | 05/29/14 11:55 | CXE0398 | CE42722 |
| Benzo(a)anthracene | 97.3 (20.8) | | 8270C | | 50 | 05/29/14 12:29 | CXE0398 | CE42722 |
| Benzo(a)pyrene | 67.4 (10.4) | | 8270C | | 50 | 05/29/14 12:29 | CXE0398 | CE42722 |
| Benzo(b)fluoranthene | 83.4 (20.8) | | 8270C | | 50 | 05/29/14 12:29 | CXE0398 | CE42722 |
| Benzo(g,h,i)perylene | 15.5 (2.08) | | 8270C | | 5 | 05/29/14 11:55 | CXE0398 | CE42722 |
| Benzo(k)fluoranthene | 46.4 (20.8) | | 8270C | | 50 | 05/29/14 12:29 | CXE0398 | CE42722 |
| Chrysene | 85.1 (10.4) | | 8270C | | 50 | 05/29/14 12:29 | CXE0398 | CE42722 |
| Dibenzo(a,h)Anthracene | 8.48 (1.04) | | 8270C | | 5 | 05/29/14 11:55 | CXE0398 | CE42722 |
| Fluoranthene | 154 (20.8) | | 8270C | | 50 | 05/29/14 12:29 | CXE0398 | CE42722 |
| Fluorene | 15.5 (2.08) | | 8270C | | 5 | 05/29/14 11:55 | CXE0398 | CE42722 |
| Indeno(1,2,3-cd)Pyrene | 16.5 (2.08) | | 8270C | | 5 | 05/29/14 11:55 | CXE0398 | CE42722 |
| Naphthalene | 16.3 (2.08) | | 8270C | | 5 | 05/29/14 11:55 | CXE0398 | CE42722 |
| Phenanthrene | 99.7 (20.8) | | 8270C | | 50 | 05/29/14 12:29 | CXE0398 | CE42722 |
| Pyrene | 109 (20.8) | | 8270C | | 50 | 05/29/14 12:29 | CXE0398 | CE42722 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|-----------------------------------|------------------|------------------|---------------|
| Surrogate: 1,2-Dichlorobenzene-d4 | 84 % | | 30-130 |
| Surrogate: 2-Fluorobiphenyl | 89 % | | 30-130 |
| Surrogate: Nitrobenzene-d5 | 97 % | | 30-130 |
| Surrogate: p-Terphenyl-d14 | 77 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-306s S-2
Date Sampled: 05/21/14 10:50
Percent Solids: 84

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-01
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | 4.89 (1.10) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-305s S-1B
Date Sampled: 05/21/14 11:50
Percent Solids: 88

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.7) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Arsenic | 15.6 (2.4) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Beryllium | 0.55 (0.10) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Cadmium | 0.88 (0.48) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Chromium | 6.4 (0.9) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Copper | 56.9 (2.4) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Lead | 135 (4.7) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Mercury | 0.227 (0.035) | | 7471A | | 1 | JP | 05/28/14 14:02 | 0.64 | 40 | CE42706 |
| Nickel | 9.6 (2.4) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Selenium | ND (4.7) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Silver | 0.85 (0.48) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |
| Thallium | ND (1.17) | | 7841 | | 5 | SVD | 05/30/14 1:49 | 2.39 | 100 | CE42801 |
| Zinc | 82.2 (2.4) | | 6010B | | 1 | KJK | 05/29/14 9:32 | 2.39 | 100 | CE42801 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-305s S-1B
 Date Sampled: 05/21/14 11:50
 Percent Solids: 88
 Initial Volume: 17.2
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405579
 ESS Laboratory Sample ID: 1405579-02
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.112) | 0.0098 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,1,1-Trichloroethane | ND (0.0561) | 0.0099 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,1,2,2-Tetrachloroethane | ND (0.0561) | 0.0153 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,1,2-Trichloroethane | ND (0.0561) | 0.0140 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,1-Dichloroethane | ND (0.0561) | 0.0090 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,1-Dichloroethene | ND (0.0561) | 0.0138 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,1-Dichloropropene | ND (0.0561) | 0.0086 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,2,3-Trichlorobenzene | ND (0.0561) | 0.0187 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,2,3-Trichloropropane | ND (0.0561) | 0.0139 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,2,4-Trichlorobenzene | ND (0.0561) | 0.0123 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,2,4-Trimethylbenzene | 0.0920 (0.0561) | 0.0108 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,2-Dibromo-3-Chloropropane | ND (0.336) | 0.112 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,2-Dibromoethane | ND (0.0561) | 0.0142 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,2-Dichlorobenzene | ND (0.0561) | 0.0080 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,2-Dichloroethane | ND (0.0561) | 0.0150 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,2-Dichloropropane | ND (0.0561) | 0.0147 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,3,5-Trimethylbenzene | J 0.0471 (0.0561) | 0.0099 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,3-Dichlorobenzene | ND (0.0561) | 0.0071 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,3-Dichloropropane | ND (0.0561) | 0.0126 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,4-Dichlorobenzene | ND (0.0561) | 0.0149 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1,4-Dioxane - Screen | ND (5.61) | 1.87 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 1-Chlorohexane | ND (0.0561) | 0.0107 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 2,2-Dichloropropane | ND (0.112) | 0.0192 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 2-Butanone | ND (1.40) | 0.324 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 2-Chlorotoluene | ND (0.0561) | 0.0158 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 2-Hexanone | ND (0.561) | 0.0966 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 4-Chlorotoluene | ND (0.0561) | 0.0073 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 4-Isopropyltoluene | ND (0.0561) | 0.0100 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| 4-Methyl-2-Pentanone | ND (0.561) | 0.0675 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Acetone | ND (1.40) | 0.415 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Benzene | J 0.0415 (0.0561) | 0.0091 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Bromobenzene | ND (0.0561) | 0.0154 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-305s S-1B
Date Sampled: 05/21/14 11:50
Percent Solids: 88
Initial Volume: 17.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0561) | 0.0182 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Bromodichloromethane | ND (0.0561) | 0.0077 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Bromoform | ND (0.0561) | 0.0162 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Bromomethane | ND (0.112) | 0.0375 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Carbon Disulfide | ND (0.0561) | 0.0083 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Carbon Tetrachloride | ND (0.0561) | 0.0098 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Chlorobenzene | B ND (0.0561) | 0.0089 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Chloroethane | ND (0.112) | 0.0374 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Chloroform | J 0.0168 (0.0561) | 0.0116 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Chloromethane | ND (0.112) | 0.0142 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| cis-1,2-Dichloroethene | ND (0.0561) | 0.0139 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| cis-1,3-Dichloropropene | ND (0.0561) | 0.0127 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Dibromochloromethane | ND (0.0561) | 0.0141 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Dibromomethane | ND (0.0561) | 0.0177 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Dichlorodifluoromethane | ND (0.0561) | 0.0098 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Diethyl Ether | ND (0.0561) | 0.0142 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Di-isopropyl ether | ND (0.0561) | 0.0105 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Ethyl tertiary-butyl ether | ND (0.0561) | 0.0141 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Ethylbenzene | 0.0606 (0.0561) | 0.0073 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Hexachlorobutadiene | ND (0.0561) | 0.0187 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Isopropylbenzene | ND (0.0561) | 0.0099 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Methyl tert-Butyl Ether | ND (0.0561) | 0.0090 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Methylene Chloride | ND (0.280) | 0.0147 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Naphthalene | 0.196 (0.0561) | 0.0147 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| n-Butylbenzene | J 0.0280 (0.0561) | 0.0138 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| n-Propylbenzene | J 0.0258 (0.0561) | 0.0137 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| sec-Butylbenzene | ND (0.0561) | 0.0075 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Styrene | J 0.0123 (0.0561) | 0.0074 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| tert-Butylbenzene | ND (0.0561) | 0.0131 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Tertiary-amyl methyl ether | ND (0.0561) | 0.0081 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Tetrachloroethene | ND (0.0561) | 0.0187 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Tetrahydrofuran | ND (0.561) | 0.145 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-305s S-1B
 Date Sampled: 05/21/14 11:50
 Percent Solids: 88
 Initial Volume: 17.2
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405579
 ESS Laboratory Sample ID: 1405579-02
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.156 (0.0561) | 0.0142 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| trans-1,2-Dichloroethene | ND (0.0561) | 0.0184 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| trans-1,3-Dichloropropene | ND (0.0561) | 0.0173 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Trichloroethene | ND (0.0561) | 0.0116 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Trichlorofluoromethane | ND (0.0561) | 0.0148 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Vinyl Acetate | ND (0.280) | 0.0116 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Vinyl Chloride | ND (0.0561) | 0.0185 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Xylene O | 0.0639 (0.0561) | 0.0108 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Xylene P,M | 0.223 (0.112) | 0.0218 | 8260B | | 1 | 06/03/14 12:15 | CXF0027 | CF40332 |
| Xylenes (Total) | 0.287 (0.112) | | 8260B | | 1 | 06/03/14 12:15 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 94 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 91 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 100 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 96 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-305s S-1B
Date Sampled: 05/21/14 11:50
Percent Solids: 88
Initial Volume: 19.6
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/27/14 15:35

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 666 (43.4) | | 8100M | | 1 | 05/28/14 4:53 | CXE0364 | CE42721 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>81 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-305s S-1B
Date Sampled: 05/21/14 11:50
Percent Solids: 88
Initial Volume: 14.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/27/14 15:35

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | 0.622 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Acenaphthene | ND (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Acenaphthylene | 0.612 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Anthracene | 0.525 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Benzo(a)anthracene | 2.61 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Benzo(a)pyrene | 1.95 (0.197) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Benzo(b)fluoranthene | 3.06 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Benzo(g,h,i)perylene | 1.02 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Benzo(k)fluoranthene | 1.34 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Chrysene | 3.23 (0.197) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Dibenzo(a,h)Anthracene | 0.451 (0.197) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Fluoranthene | 3.15 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Fluorene | ND (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Indeno(1,2,3-cd)Pyrene | 0.899 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Naphthalene | 0.714 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Phenanthrene | 2.36 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |
| Pyrene | 2.53 (0.393) | | 8270C | | 1 | 05/29/14 9:37 | CXE0398 | CE42722 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|-----------------------------------|------------------|------------------|---------------|
| Surrogate: 1,2-Dichlorobenzene-d4 | 77 % | | 30-130 |
| Surrogate: 2-Fluorobiphenyl | 84 % | | 30-130 |
| Surrogate: Nitrobenzene-d5 | 75 % | | 30-130 |
| Surrogate: p-Terphenyl-d14 | 90 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-305s S-1B
Date Sampled: 05/21/14 11:50
Percent Solids: 88

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-02
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | 5.55 (1.10) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-304d S-2
Date Sampled: 05/21/14 14:35
Percent Solids: 83

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | 80.4 (5.0) | | 6010B | | 1 | KJK | 05/29/14 9:36 | 2.43 | 100 | CE42801 |
| Arsenic | 46.4 (2.5) | | 6010B | | 1 | KJK | 05/29/14 9:36 | 2.43 | 100 | CE42801 |
| Beryllium | 0.55 (0.10) | | 6010B | | 1 | KJK | 05/29/14 9:36 | 2.43 | 100 | CE42801 |
| Cadmium | 3.32 (0.50) | | 6010B | | 1 | KJK | 05/29/14 9:36 | 2.43 | 100 | CE42801 |
| Chromium | 13.6 (1.0) | | 6010B | | 1 | KJK | 05/29/14 9:36 | 2.43 | 100 | CE42801 |
| Copper | 1750 (2.5) | | 6010B | | 1 | KJK | 05/29/14 9:36 | 2.43 | 100 | CE42801 |
| Lead | 1610 (9.9) | | 6010B | | 2 | KJK | 05/29/14 20:27 | 2.43 | 100 | CE42801 |
| Mercury | 1.37 (0.378) | | 7471A | | 10 | JP | 05/28/14 15:31 | 0.63 | 40 | CE42706 |
| Nickel | 57.9 (2.5) | | 6010B | | 1 | KJK | 05/29/14 9:36 | 2.43 | 100 | CE42801 |
| Selenium | ND (9.9) | | 6010B | | 2 | KJK | 05/29/14 20:27 | 2.43 | 100 | CE42801 |
| Silver | 2.51 (0.50) | | 6010B | | 1 | KJK | 05/29/14 9:36 | 2.43 | 100 | CE42801 |
| Thallium | ND (1.22) | | 7841 | | 5 | SVD | 05/30/14 1:54 | 2.43 | 100 | CE42801 |
| Zinc | 1280 (4.9) | | 6010B | | 2 | KJK | 05/29/14 20:27 | 2.43 | 100 | CE42801 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-304d S-2
Date Sampled: 05/21/14 14:35
Percent Solids: 83
Initial Volume: 17.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.121) | 0.0105 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,1,1-Trichloroethane | ND (0.0605) | 0.0106 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,1,2,2-Tetrachloroethane | ND (0.0605) | 0.0165 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,1,2-Trichloroethane | ND (0.0605) | 0.0151 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,1-Dichloroethane | ND (0.0605) | 0.0097 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,1-Dichloroethene | ND (0.0605) | 0.0149 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,1-Dichloropropene | ND (0.0605) | 0.0093 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,2,3-Trichlorobenzene | ND (0.0605) | 0.0202 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,2,3-Trichloropropane | ND (0.0605) | 0.0150 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,2,4-Trichlorobenzene | ND (0.0605) | 0.0133 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,2,4-Trimethylbenzene | 0.167 (0.0605) | 0.0116 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,2-Dibromo-3-Chloropropane | ND (0.363) | 0.121 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,2-Dibromoethane | ND (0.0605) | 0.0154 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,2-Dichlorobenzene | ND (0.0605) | 0.0086 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,2-Dichloroethane | ND (0.0605) | 0.0162 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,2-Dichloropropane | ND (0.0605) | 0.0158 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,3,5-Trimethylbenzene | J 0.0593 (0.0605) | 0.0106 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,3-Dichlorobenzene | ND (0.0605) | 0.0076 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,3-Dichloropropane | ND (0.0605) | 0.0136 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,4-Dichlorobenzene | ND (0.0605) | 0.0161 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1,4-Dioxane - Screen | ND (6.05) | 2.02 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 1-Chlorohexane | ND (0.0605) | 0.0115 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 2,2-Dichloropropane | ND (0.121) | 0.0207 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 2-Butanone | ND (1.51) | 0.350 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 2-Chlorotoluene | ND (0.0605) | 0.0171 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 2-Hexanone | ND (0.605) | 0.104 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 4-Chlorotoluene | ND (0.0605) | 0.0079 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 4-Isopropyltoluene | J 0.0194 (0.0605) | 0.0108 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| 4-Methyl-2-Pentanone | ND (0.605) | 0.0728 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Acetone | ND (1.51) | 0.448 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Benzene | 0.181 (0.0605) | 0.0098 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Bromobenzene | ND (0.0605) | 0.0166 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-304d S-2
Date Sampled: 05/21/14 14:35
Percent Solids: 83
Initial Volume: 17.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0605) | 0.0196 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Bromodichloromethane | ND (0.0605) | 0.0083 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Bromoform | ND (0.0605) | 0.0174 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Bromomethane | ND (0.121) | 0.0404 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Carbon Disulfide | ND (0.0605) | 0.0090 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Carbon Tetrachloride | ND (0.0605) | 0.0105 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Chlorobenzene | ND (0.0605) | 0.0096 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Chloroethane | ND (0.121) | 0.0403 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Chloroform | B, J 0.0242 (0.0605) | 0.0125 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Chloromethane | ND (0.121) | 0.0154 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| cis-1,2-Dichloroethene | ND (0.0605) | 0.0150 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| cis-1,3-Dichloropropene | ND (0.0605) | 0.0137 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Dibromochloromethane | ND (0.0605) | 0.0152 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Dibromomethane | ND (0.0605) | 0.0191 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Dichlorodifluoromethane | ND (0.0605) | 0.0105 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Diethyl Ether | ND (0.0605) | 0.0154 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Di-isopropyl ether | ND (0.0605) | 0.0114 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Ethyl tertiary-butyl ether | ND (0.0605) | 0.0152 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Ethylbenzene | 0.394 (0.0605) | 0.0079 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Hexachlorobutadiene | ND (0.0605) | 0.0202 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Isopropylbenzene | J 0.0339 (0.0605) | 0.0106 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Methyl tert-Butyl Ether | ND (0.0605) | 0.0097 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Methylene Chloride | ND (0.302) | 0.0158 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Naphthalene | 0.720 (0.0605) | 0.0158 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| n-Butylbenzene | ND (0.0605) | 0.0149 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| n-Propylbenzene | 0.0871 (0.0605) | 0.0148 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| sec-Butylbenzene | J 0.0290 (0.0605) | 0.0081 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Styrene | ND (0.0605) | 0.0080 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| tert-Butylbenzene | ND (0.0605) | 0.0142 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Tertiary-amyl methyl ether | ND (0.0605) | 0.0087 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Tetrachloroethene | ND (0.0605) | 0.0202 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Tetrahydrofuran | ND (0.605) | 0.156 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-304d S-2
Date Sampled: 05/21/14 14:35
Percent Solids: 83
Initial Volume: 17.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|-----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.264 (0.0605) | 0.0154 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| trans-1,2-Dichloroethene | ND (0.0605) | 0.0198 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| trans-1,3-Dichloropropene | ND (0.0605) | 0.0186 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Trichloroethene | ND (0.0605) | 0.0125 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Trichlorofluoromethane | ND (0.0605) | 0.0160 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Vinyl Acetate | ND (0.302) | 0.0125 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Vinyl Chloride | ND (0.0605) | 0.0200 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Xylene O | 0.134 (0.0605) | 0.0116 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Xylene P,M | 0.547 (0.121) | 0.0235 | 8260B | | 1 | 05/30/14 17:19 | CXE0430 | CE43040 |
| Xylenes (Total) | 0.681 (0.121) | | 8260B | | 1 | 05/30/14 17:19 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 108 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 111 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 115 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 116 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-304d S-2
Date Sampled: 05/21/14 14:35
Percent Solids: 83
Initial Volume: 19.7
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/27/14 15:35

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 3790 (458) | | 8100M | | 10 | 05/28/14 7:28 | CXE0364 | CE42721 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>101 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-304d S-2
Date Sampled: 05/21/14 14:35
Percent Solids: 83
Initial Volume: 14.3
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/27/14 15:35

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | 2.30 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Acenaphthene | ND (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Acenaphthylene | 5.14 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Anthracene | 5.91 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Benzo(a)anthracene | 19.0 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Benzo(a)pyrene | 15.7 (1.05) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Benzo(b)fluoranthene | 19.5 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Benzo(g,h,i)perylene | 8.45 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Benzo(k)fluoranthene | 7.57 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Chrysene | 18.0 (1.05) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Dibenzo(a,h)Anthracene | 3.70 (1.05) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Fluoranthene | 30.2 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Fluorene | 2.27 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Indeno(1,2,3-cd)Pyrene | 8.38 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Naphthalene | 5.34 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Phenanthrene | 16.9 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |
| Pyrene | 19.2 (2.10) | | 8270C | | 5 | 05/29/14 10:11 | CXE0398 | CE42722 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|-----------------------------------|------------------|------------------|---------------|
| Surrogate: 1,2-Dichlorobenzene-d4 | 86 % | | 30-130 |
| Surrogate: 2-Fluorobiphenyl | 100 % | | 30-130 |
| Surrogate: Nitrobenzene-d5 | 86 % | | 30-130 |
| Surrogate: p-Terphenyl-d14 | 92 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-304d S-2
Date Sampled: 05/21/14 14:35
Percent Solids: 83

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-03
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | 2.67 (1.16) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank
Date Sampled: 05/21/14 08:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-04
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.100) | 0.0087 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,1,1-Trichloroethane | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,1,2,2-Tetrachloroethane | ND (0.0500) | 0.0136 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,1,2-Trichloroethane | ND (0.0500) | 0.0125 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,1-Dichloroethane | ND (0.0500) | 0.0080 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,1-Dichloroethene | ND (0.0500) | 0.0123 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,1-Dichloropropene | ND (0.0500) | 0.0077 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,2,3-Trichlorobenzene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,2,3-Trichloropropane | ND (0.0500) | 0.0124 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,2,4-Trichlorobenzene | ND (0.0500) | 0.0110 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,2,4-Trimethylbenzene | ND (0.0500) | 0.0096 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,2-Dibromo-3-Chloropropane | ND (0.300) | 0.100 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,2-Dibromoethane | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,2-Dichlorobenzene | ND (0.0500) | 0.0071 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,2-Dichloroethane | ND (0.0500) | 0.0134 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,2-Dichloropropane | ND (0.0500) | 0.0131 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,3,5-Trimethylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,3-Dichlorobenzene | ND (0.0500) | 0.0063 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,3-Dichloropropane | ND (0.0500) | 0.0112 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,4-Dichlorobenzene | ND (0.0500) | 0.0133 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1,4-Dioxane - Screen | ND (5.00) | 1.67 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 1-Chlorohexane | ND (0.0500) | 0.0095 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 2,2-Dichloropropane | ND (0.100) | 0.0171 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 2-Butanone | ND (1.25) | 0.289 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 2-Chlorotoluene | ND (0.0500) | 0.0141 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 2-Hexanone | ND (0.500) | 0.0861 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 4-Chlorotoluene | ND (0.0500) | 0.0065 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 4-Isopropyltoluene | ND (0.0500) | 0.0089 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| 4-Methyl-2-Pentanone | ND (0.500) | 0.0602 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Acetone | ND (1.25) | 0.370 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Benzene | ND (0.0500) | 0.0081 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Bromobenzene | ND (0.0500) | 0.0137 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank
Date Sampled: 05/21/14 08:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-04
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0500) | 0.0162 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Bromodichloromethane | ND (0.0500) | 0.0069 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Bromoform | ND (0.0500) | 0.0144 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Bromomethane | ND (0.100) | 0.0334 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Carbon Disulfide | ND (0.0500) | 0.0074 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Carbon Tetrachloride | ND (0.0500) | 0.0087 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Chlorobenzene | ND (0.0500) | 0.0079 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Chloroethane | ND (0.100) | 0.0333 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Chloroform | J 0.0230 (0.0500) | 0.0103 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Chloromethane | ND (0.100) | 0.0127 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| cis-1,2-Dichloroethene | ND (0.0500) | 0.0124 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| cis-1,3-Dichloropropene | ND (0.0500) | 0.0113 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Dibromochloromethane | ND (0.0500) | 0.0126 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Dibromomethane | ND (0.0500) | 0.0158 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Dichlorodifluoromethane | ND (0.0500) | 0.0087 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Diethyl Ether | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Di-isopropyl ether | ND (0.0500) | 0.0094 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Ethyl tertiary-butyl ether | ND (0.0500) | 0.0126 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Ethylbenzene | ND (0.0500) | 0.0065 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Hexachlorobutadiene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Isopropylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Methyl tert-Butyl Ether | ND (0.0500) | 0.0080 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Methylene Chloride | ND (0.250) | 0.0131 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Naphthalene | ND (0.0500) | 0.0131 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| n-Butylbenzene | ND (0.0500) | 0.0123 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| n-Propylbenzene | ND (0.0500) | 0.0122 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| sec-Butylbenzene | ND (0.0500) | 0.0067 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Styrene | ND (0.0500) | 0.0066 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| tert-Butylbenzene | ND (0.0500) | 0.0117 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Tertiary-amyl methyl ether | ND (0.0500) | 0.0072 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Tetrachloroethene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Tetrahydrofuran | ND (0.500) | 0.129 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank
Date Sampled: 05/21/14 08:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405579
ESS Laboratory Sample ID: 1405579-04
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| trans-1,2-Dichloroethene | ND (0.0500) | 0.0164 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| trans-1,3-Dichloropropene | ND (0.0500) | 0.0154 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Trichloroethene | ND (0.0500) | 0.0103 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Trichlorofluoromethane | ND (0.0500) | 0.0132 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Vinyl Acetate | ND (0.250) | 0.0103 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Vinyl Chloride | ND (0.0500) | 0.0165 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Xylene O | ND (0.0500) | 0.0096 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Xylene P,M | ND (0.100) | 0.0194 | 8260B | | 1 | 05/30/14 13:35 | CXE0430 | CE43040 |
| Xylenes (Total) | ND (0.100) | | 8260B | | 1 | 05/30/14 13:35 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>94 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>96 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>99 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>99 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42706 - 7471A

Blank

| | | | | | | | | | | |
|---------|----|-------|-----------|--|--|--|--|--|--|--|
| Mercury | ND | 0.033 | mg/kg wet | | | | | | | |
|---------|----|-------|-----------|--|--|--|--|--|--|--|

LCS

| | | | | | | | | | | |
|---------|------|------|-----------|-------|--|----|--------|--|--|--|
| Mercury | 3.88 | 1.60 | mg/kg wet | 3.980 | | 98 | 80-120 | | | |
|---------|------|------|-----------|-------|--|----|--------|--|--|--|

LCS Dup

| | | | | | | | | | | |
|---------|------|------|-----------|-------|--|-----|--------|---|----|--|
| Mercury | 4.05 | 1.52 | mg/kg wet | 3.980 | | 102 | 80-120 | 4 | 20 | |
|---------|------|------|-----------|-------|--|-----|--------|---|----|--|

Batch CE42801 - 3050B

Blank

| | | | | | | | | | | |
|-----------|----|------|-----------|--|--|--|--|--|--|--|
| Antimony | ND | 5.0 | mg/kg wet | | | | | | | |
| Arsenic | ND | 2.5 | mg/kg wet | | | | | | | |
| Beryllium | ND | 0.10 | mg/kg wet | | | | | | | |
| Cadmium | ND | 0.50 | mg/kg wet | | | | | | | |
| Chromium | ND | 1.0 | mg/kg wet | | | | | | | |
| Copper | ND | 2.5 | mg/kg wet | | | | | | | |
| Lead | ND | 5.0 | mg/kg wet | | | | | | | |
| Nickel | ND | 2.5 | mg/kg wet | | | | | | | |
| Selenium | ND | 5.0 | mg/kg wet | | | | | | | |
| Silver | ND | 0.50 | mg/kg wet | | | | | | | |
| Thallium | ND | 0.25 | mg/kg wet | | | | | | | |
| Zinc | ND | 2.5 | mg/kg wet | | | | | | | |

LCS

| | | | | | | | | | | |
|-----------|------|------|-----------|-------|--|----|--------|--|--|--|
| Antimony | 98.3 | 15.9 | mg/kg wet | 116.0 | | 85 | 80-120 | | | |
| Arsenic | 113 | 7.9 | mg/kg wet | 122.0 | | 93 | 80-120 | | | |
| Beryllium | 48.9 | 0.33 | mg/kg wet | 54.30 | | 90 | 80-120 | | | |
| Cadmium | 74.0 | 1.60 | mg/kg wet | 88.00 | | 84 | 80-120 | | | |
| Chromium | 87.6 | 3.2 | mg/kg wet | 102.0 | | 86 | 80-120 | | | |
| Copper | 68.6 | 7.9 | mg/kg wet | 78.00 | | 88 | 80-120 | | | |
| Lead | 82.9 | 15.9 | mg/kg wet | 94.50 | | 88 | 80-120 | | | |
| Nickel | 49.4 | 7.9 | mg/kg wet | 56.30 | | 88 | 80-120 | | | |
| Selenium | 131 | 15.9 | mg/kg wet | 157.0 | | 84 | 80-120 | | | |
| Silver | 31.2 | 1.60 | mg/kg wet | 34.20 | | 91 | 80-120 | | | |
| Thallium | 102 | 39.3 | mg/kg wet | 116.0 | | 88 | 80-120 | | | |
| Zinc | 175 | 7.9 | mg/kg wet | 207.0 | | 84 | 80-120 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------|------|------|-----------|-------|--|----|--------|-----|----|--|
| Antimony | 101 | 16.1 | mg/kg wet | 116.0 | | 87 | 80-120 | 3 | 20 | |
| Arsenic | 114 | 8.1 | mg/kg wet | 122.0 | | 94 | 80-120 | 0.6 | 20 | |
| Beryllium | 49.2 | 0.34 | mg/kg wet | 54.30 | | 91 | 80-120 | 0.7 | 20 | |
| Cadmium | 77.1 | 1.62 | mg/kg wet | 88.00 | | 88 | 80-120 | 4 | 20 | |
| Chromium | 88.7 | 3.2 | mg/kg wet | 102.0 | | 87 | 80-120 | 1 | 20 | |
| Copper | 69.6 | 8.1 | mg/kg wet | 78.00 | | 89 | 80-120 | 2 | 20 | |
| Lead | 84.2 | 16.1 | mg/kg wet | 94.50 | | 89 | 80-120 | 2 | 20 | |
| Nickel | 50.9 | 8.1 | mg/kg wet | 56.30 | | 90 | 80-120 | 3 | 20 | |
| Selenium | 132 | 16.1 | mg/kg wet | 157.0 | | 84 | 80-120 | 0.8 | 20 | |
| Silver | 31.4 | 1.62 | mg/kg wet | 34.20 | | 92 | 80-120 | 0.7 | 20 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42801 - 3050B

| | | | | | | | | | | |
|----------|-----|------|-----------|-------|--|----|--------|-----|----|--|
| Thallium | 107 | 39.9 | mg/kg wet | 116.0 | | 92 | 80-120 | 5 | 20 | |
| Zinc | 175 | 8.1 | mg/kg wet | 207.0 | | 85 | 80-120 | 0.2 | 20 | |

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

Blank

| | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|-----|--------|--|--|---|
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0250 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | 0.0280 | 0.250 | mg/kg wet | | | | | | | J |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.47 | | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.52 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.56 | | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.58 | | mg/kg wet | 2.500 | | 103 | 70-130 | | | |

LCS

| | | | | | | | | | | |
|---------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.47 | 0.100 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,1-Dichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,1-Dichloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1-Dichloropropene | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,2,3-Trichlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.58 | 0.300 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,2-Dibromoethane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2-Dichloroethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dichloropropane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,3-Dichloropropane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,4-Dioxane - Screen | 62.1 | 5.00 | mg/kg wet | 50.00 | | 124 | 44-241 | | | |
| 1-Chlorohexane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 2,2-Dichloropropane | 2.48 | 0.100 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 2-Butanone | 12.5 | 1.25 | mg/kg wet | 12.50 | | 100 | 70-130 | | | |
| 2-Chlorotoluene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 2-Hexanone | 12.2 | 0.500 | mg/kg wet | 12.50 | | 97 | 70-130 | | | |
| 4-Chlorotoluene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 4-Isopropyltoluene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 13.4 | 0.500 | mg/kg wet | 12.50 | | 107 | 70-130 | | | |
| Acetone | 12.3 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| Benzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Bromobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Bromochloromethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Bromodichloromethane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Bromoform | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| Bromomethane | 2.77 | 0.100 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Carbon Disulfide | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Carbon Tetrachloride | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Chlorobenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Chloroethane | 2.22 | 0.100 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Chloroform | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Chloromethane | 2.56 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.77 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Dibromochloromethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Dibromomethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Dichlorodifluoromethane | 2.22 | 0.0500 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Diethyl Ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Di-isopropyl ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Ethylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Hexachlorobutadiene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|---|-------------|--------|-----------|--------------|--|------------|---------------|--|--|--|
| Isopropylbenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Methylene Chloride | 2.60 | 0.250 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Naphthalene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| n-Butylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| n-Propylbenzene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| sec-Butylbenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Styrene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| tert-Butylbenzene | 2.88 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Tetrachloroethene | 1.82 | 0.0500 | mg/kg wet | 2.500 | | 73 | 70-130 | | | |
| Tetrahydrofuran | 2.77 | 0.500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Toluene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Trichloroethene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Vinyl Acetate | 2.93 | 0.250 | mg/kg wet | 2.500 | | 117 | 70-130 | | | |
| Vinyl Chloride | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Xylene O | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Xylene P,M | 5.15 | 0.100 | mg/kg wet | 5.000 | | 103 | 70-130 | | | |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>2.50</i> | | mg/kg wet | <i>2.500</i> | | <i>100</i> | <i>70-130</i> | | | |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>2.49</i> | | mg/kg wet | <i>2.500</i> | | <i>100</i> | <i>70-130</i> | | | |
| <i>Surrogate: Dibromofluoromethane</i> | <i>2.47</i> | | mg/kg wet | <i>2.500</i> | | <i>99</i> | <i>70-130</i> | | | |
| <i>Surrogate: Toluene-d8</i> | <i>2.56</i> | | mg/kg wet | <i>2.500</i> | | <i>102</i> | <i>70-130</i> | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|------|----|--|
| 1,1,1,2-Tetrachloroethane | 2.46 | 0.100 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.3 | 25 | |
| 1,1,1-Trichloroethane | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 1 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 0.4 | 25 | |
| 1,1,2-Trichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| 1,1-Dichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.08 | 25 | |
| 1,1-Dichloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.2 | 25 | |
| 1,1-Dichloropropene | 2.85 | 0.0500 | mg/kg wet | 2.500 | | 114 | 70-130 | 3 | 25 | |
| 1,2,3-Trichlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.2 | 25 | |
| 1,2,3-Trichloropropane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| 1,2,4-Trichlorobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| 1,2,4-Trimethylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.8 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.46 | 0.300 | mg/kg wet | 2.500 | | 99 | 70-130 | 5 | 25 | |
| 1,2-Dibromoethane | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| 1,2-Dichlorobenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.7 | 25 | |
| 1,2-Dichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 3 | 25 | |
| 1,2-Dichloropropane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.08 | 25 | |
| 1,3,5-Trimethylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| 1,3-Dichlorobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.6 | 25 | |
| 1,3-Dichloropropane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| 1,4-Dichlorobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|------|-----|--|
| 1,4-Dioxane - Screen | 55.0 | 5.00 | mg/kg wet | 50.00 | | 110 | 44-241 | 12 | 200 | |
| 1-Chlorohexane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 3 | 25 | |
| 2,2-Dichloropropane | 2.49 | 0.100 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.4 | 25 | |
| 2-Butanone | 12.1 | 1.25 | mg/kg wet | 12.50 | | 97 | 70-130 | 3 | 25 | |
| 2-Chlorotoluene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 1 | 25 | |
| 2-Hexanone | 11.8 | 0.500 | mg/kg wet | 12.50 | | 94 | 70-130 | 3 | 25 | |
| 4-Chlorotoluene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.5 | 25 | |
| 4-Isopropyltoluene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.7 | 25 | |
| 4-Methyl-2-Pentanone | 12.6 | 0.500 | mg/kg wet | 12.50 | | 101 | 70-130 | 6 | 25 | |
| Acetone | 12.1 | 1.25 | mg/kg wet | 12.50 | | 97 | 70-130 | 1 | 25 | |
| Benzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.9 | 25 | |
| Bromobenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.6 | 25 | |
| Bromochloromethane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 1 | 25 | |
| Bromodichloromethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Bromoform | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.7 | 25 | |
| Bromomethane | 2.72 | 0.100 | mg/kg wet | 2.500 | | 109 | 70-130 | 2 | 25 | |
| Carbon Disulfide | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| Carbon Tetrachloride | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 1 | 25 | |
| Chlorobenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.8 | 25 | |
| Chloroethane | 2.24 | 0.100 | mg/kg wet | 2.500 | | 90 | 70-130 | 0.8 | 25 | |
| Chloroform | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.2 | 25 | |
| Chloromethane | 2.59 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.9 | 25 | |
| cis-1,2-Dichloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| cis-1,3-Dichloropropene | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 1 | 25 | |
| Dibromochloromethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.07 | 25 | |
| Dibromomethane | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| Dichlorodifluoromethane | 2.26 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | 2 | 25 | |
| Diethyl Ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.2 | 25 | |
| Di-isopropyl ether | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| Ethyl tertiary-butyl ether | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| Ethylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.08 | 25 | |
| Hexachlorobutadiene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 3 | 25 | |
| Isopropylbenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.7 | 25 | |
| Methyl tert-Butyl Ether | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| Methylene Chloride | 2.58 | 0.250 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.6 | 25 | |
| Naphthalene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| n-Butylbenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| n-Propylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| sec-Butylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| Styrene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.4 | 25 | |
| tert-Butylbenzene | 2.88 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | 0.1 | 25 | |
| Tertiary-amyl methyl ether | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| Tetrachloroethene | 1.85 | 0.0500 | mg/kg wet | 2.500 | | 74 | 70-130 | 2 | 25 | |
| Tetrahydrofuran | 2.55 | 0.500 | mg/kg wet | 2.500 | | 102 | 70-130 | 8 | 25 | |
| Toluene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.6 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| trans-1,2-Dichloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.2 | 25 | |
| trans-1,3-Dichloropropene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.8 | 25 | |
| Trichloroethene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 1 | 25 | |
| Vinyl Acetate | 2.86 | 0.250 | mg/kg wet | 2.500 | | 114 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.9 | 25 | |
| Xylene O | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 3 | 25 | |
| Xylene P,M | 5.26 | 0.100 | mg/kg wet | 5.000 | | 105 | 70-130 | 2 | 25 | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.42 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.42 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.43 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.53 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |

Batch CF40332 - 5035

| Blank | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|-----|--------|--|--|---|
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0200 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.52 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.52 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.59 | | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.55 | | mg/kg wet | 2.500 | | 102 | 70-130 | | | |

LCS



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.40 | 0.100 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,1-Dichloroethane | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,1-Dichloroethene | 2.29 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,1-Dichloropropene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.37 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.31 | 0.300 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,2-Dibromoethane | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,2-Dichloroethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,2-Dichloropropane | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,3-Dichloropropane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,4-Dioxane - Screen | 54.0 | 5.00 | mg/kg wet | 50.00 | | 108 | 44-241 | | | |
| 1-Chlorohexane | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 2,2-Dichloropropane | 2.46 | 0.100 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 2-Butanone | 11.3 | 1.25 | mg/kg wet | 12.50 | | 90 | 70-130 | | | |
| 2-Chlorotoluene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 2-Hexanone | 11.2 | 0.500 | mg/kg wet | 12.50 | | 90 | 70-130 | | | |
| 4-Chlorotoluene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 4-Isopropyltoluene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.2 | 0.500 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| Acetone | 11.4 | 1.25 | mg/kg wet | 12.50 | | 91 | 70-130 | | | |
| Benzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Bromobenzene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Bromochloromethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Bromodichloromethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Bromoform | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Bromomethane | 2.44 | 0.100 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Carbon Disulfide | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| Carbon Tetrachloride | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Chlorobenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Chloroethane | 2.01 | 0.100 | mg/kg wet | 2.500 | | 80 | 70-130 | | | |
| Chloroform | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Chloromethane | 2.17 | 0.100 | mg/kg wet | 2.500 | | 87 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.73 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Dibromochloromethane | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Dibromomethane | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Dichlorodifluoromethane | 2.06 | 0.0500 | mg/kg wet | 2.500 | | 83 | 70-130 | | | |
| Diethyl Ether | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Di-isopropyl ether | 2.37 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Ethylbenzene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Hexachlorobutadiene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Isopropylbenzene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Methylene Chloride | 2.40 | 0.250 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Naphthalene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| n-Butylbenzene | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| n-Propylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| sec-Butylbenzene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Styrene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| tert-Butylbenzene | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Tetrachloroethene | 1.77 | 0.0500 | mg/kg wet | 2.500 | | 71 | 70-130 | | | |
| Tetrahydrofuran | 2.34 | 0.500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Toluene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Trichloroethene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Vinyl Acetate | 2.72 | 0.250 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Vinyl Chloride | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Xylene O | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Xylene P,M | 4.91 | 0.100 | mg/kg wet | 5.000 | | 98 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.36 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.34 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.35 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.41 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|------|----|--|
| 1,1,1,2-Tetrachloroethane | 2.43 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| 1,1,1-Trichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.4 | 25 | |
| 1,1,2-Trichloroethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.08 | 25 | |
| 1,1-Dichloroethane | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | 0.5 | 25 | |
| 1,1-Dichloroethene | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | 1 | 25 | |
| 1,1-Dichloropropene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 2 | 25 | |
| 1,2,3-Trichlorobenzene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 4 | 25 | |
| 1,2,3-Trichloropropane | 2.28 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | 4 | 25 | |
| 1,2,4-Trichlorobenzene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.6 | 25 | |
| 1,2,4-Trimethylbenzene | 2.37 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.30 | 0.300 | mg/kg wet | 2.500 | | 92 | 70-130 | 0.5 | 25 | |
| 1,2-Dibromoethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.6 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|------|-----|--|
| 1,2-Dichlorobenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| 1,2-Dichloroethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| 1,2-Dichloropropane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| 1,3,5-Trimethylbenzene | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.5 | 25 | |
| 1,3-Dichlorobenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| 1,3-Dichloropropane | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 2 | 25 | |
| 1,4-Dichlorobenzene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.6 | 25 | |
| 1,4-Dioxane - Screen | 54.3 | 5.00 | mg/kg wet | 50.00 | | 109 | 44-241 | 0.5 | 200 | |
| 1-Chlorohexane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| 2,2-Dichloropropane | 2.45 | 0.100 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.4 | 25 | |
| 2-Butanone | 10.9 | 1.25 | mg/kg wet | 12.50 | | 87 | 70-130 | 4 | 25 | |
| 2-Chlorotoluene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 10 | 25 | |
| 2-Hexanone | 10.9 | 0.500 | mg/kg wet | 12.50 | | 88 | 70-130 | 2 | 25 | |
| 4-Chlorotoluene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| 4-Isopropyltoluene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| 4-Methyl-2-Pentanone | 11.8 | 0.500 | mg/kg wet | 12.50 | | 94 | 70-130 | 3 | 25 | |
| Acetone | 10.9 | 1.25 | mg/kg wet | 12.50 | | 87 | 70-130 | 4 | 25 | |
| Benzene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.7 | 25 | |
| Bromobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| Bromochloromethane | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 3 | 25 | |
| Bromodichloromethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.2 | 25 | |
| Bromoform | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.2 | 25 | |
| Bromomethane | 2.68 | 0.100 | mg/kg wet | 2.500 | | 107 | 70-130 | 10 | 25 | |
| Carbon Disulfide | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 0.04 | 25 | |
| Carbon Tetrachloride | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.3 | 25 | |
| Chlorobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.8 | 25 | |
| Chloroethane | 2.07 | 0.100 | mg/kg wet | 2.500 | | 83 | 70-130 | 3 | 25 | |
| Chloroform | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 0.6 | 25 | |
| Chloromethane | 2.24 | 0.100 | mg/kg wet | 2.500 | | 90 | 70-130 | 3 | 25 | |
| cis-1,2-Dichloroethene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| cis-1,3-Dichloropropene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 4 | 25 | |
| Dibromochloromethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| Dibromomethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 1 | 25 | |
| Dichlorodifluoromethane | 2.05 | 0.0500 | mg/kg wet | 2.500 | | 82 | 70-130 | 0.6 | 25 | |
| Diethyl Ether | 2.28 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | 2 | 25 | |
| Di-isopropyl ether | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 2 | 25 | |
| Ethyl tertiary-butyl ether | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| Ethylbenzene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.7 | 25 | |
| Hexachlorobutadiene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 3 | 25 | |
| Isopropylbenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| Methyl tert-Butyl Ether | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 2 | 25 | |
| Methylene Chloride | 2.42 | 0.250 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.7 | 25 | |
| Naphthalene | 2.37 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| n-Butylbenzene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| n-Propylbenzene | 2.31 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 6 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|---|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| sec-Butylbenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| Styrene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.9 | 25 | |
| tert-Butylbenzene | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 1 | 25 | |
| Tertiary-amyl methyl ether | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 2 | 25 | |
| Tetrachloroethene | 1.77 | 0.0500 | mg/kg wet | 2.500 | | 71 | 70-130 | 0.1 | 25 | |
| Tetrahydrofuran | 2.29 | 0.500 | mg/kg wet | 2.500 | | 92 | 70-130 | 2 | 25 | |
| Toluene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.9 | 25 | |
| trans-1,2-Dichloroethene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| trans-1,3-Dichloropropene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| Trichloroethene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| Vinyl Acetate | 2.63 | 0.250 | mg/kg wet | 2.500 | | 105 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 2 | 25 | |
| Xylene O | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| Xylene P,M | 4.97 | 0.100 | mg/kg wet | 5.000 | | 99 | 70-130 | 1 | 25 | |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 2.35 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 2.31 | | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| <i>Surrogate: Dibromofluoromethane</i> | 2.34 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| <i>Surrogate: Toluene-d8</i> | 2.43 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |

8100M Total Petroleum Hydrocarbons

Batch CE42721 - 3546

Blank

| | | | | | | | | | | |
|-------------------------------|------|------|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacontane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |
| <i>Surrogate: O-Terphenyl</i> | 4.33 | | mg/kg wet | 5.000 | | 87 | 40-140 | | | |

LCS

| | | | | | | | | | | |
|------------------|-----|-----|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 75 | 40-140 | | | |
| Docosane (C22) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 83 | 40-140 | | | |
| Eicosane (C20) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | | | |
| Hexacosane (C26) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 83 | 40-140 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8100M Total Petroleum Hydrocarbons

Batch CE42721 - 3546

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|----|--------|--|--|--|
| Nonadecane (C19) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Nonane (C9) | 1.8 | 0.2 | mg/kg wet | 2.500 | | 71 | 30-140 | | | |
| Octacosane (C28) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Octadecane (C18) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Tetracosane (C24) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Tetradecane (C14) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 82 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 32.8 | 37.5 | mg/kg wet | 35.00 | | 94 | 40-140 | | | |
| Triacontane (C30) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | | | |

Surrogate: O-Terphenyl

4.39 mg/kg wet 5.000 88 40-140

LCS Dup

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|----|--------|---|----|--|
| Decane (C10) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 77 | 40-140 | 2 | 25 | |
| Docosane (C22) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 2 | 25 | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 84 | 40-140 | 2 | 25 | |
| Eicosane (C20) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | 2 | 25 | |
| Hexacosane (C26) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 2 | 25 | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 84 | 40-140 | 2 | 25 | |
| Nonadecane (C19) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 5 | 25 | |
| Nonane (C9) | 1.7 | 0.2 | mg/kg wet | 2.500 | | 69 | 30-140 | 2 | 25 | |
| Octacosane (C28) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | 2 | 25 | |
| Octadecane (C18) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | 2 | 25 | |
| Tetracosane (C24) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | 1 | 25 | |
| Tetradecane (C14) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | 4 | 25 | |
| Total Petroleum Hydrocarbons | 33.5 | 37.5 | mg/kg wet | 35.00 | | 96 | 40-140 | 2 | 25 | |
| Triacontane (C30) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | 2 | 25 | |

Surrogate: O-Terphenyl

4.39 mg/kg wet 5.000 88 40-140

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42722 - 3546

Blank

| | | | | | | | | | | |
|------------------------|----|-------|-----------|--|--|--|--|--|--|--|
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)pyrene | ND | 0.167 | mg/kg wet | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Chrysene | ND | 0.167 | mg/kg wet | | | | | | | |
| Dibenzo(a,h)Anthracene | ND | 0.167 | mg/kg wet | | | | | | | |
| Fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Fluorene | ND | 0.333 | mg/kg wet | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42722 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| Naphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Phenanthrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 3.43 | | mg/kg wet | 3.333 | | 103 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.68 | | mg/kg wet | 3.333 | | 110 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 3.17 | | mg/kg wet | 3.333 | | 95 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 4.19 | | mg/kg wet | 3.333 | | 126 | 30-130 | | | |

LCS

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | 2.72 | 0.333 | mg/kg wet | 3.333 | | 82 | 40-140 | | | |
| Acenaphthene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | | | |
| Acenaphthylene | 2.69 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Anthracene | 2.80 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | | | |
| Benzo(a)anthracene | 2.96 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | | | |
| Benzo(a)pyrene | 2.89 | 0.167 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Benzo(b)fluoranthene | 3.30 | 0.333 | mg/kg wet | 3.333 | | 99 | 40-140 | | | |
| Benzo(g,h,i)perylene | 3.24 | 0.333 | mg/kg wet | 3.333 | | 97 | 40-140 | | | |
| Benzo(k)fluoranthene | 2.78 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | | | |
| Chrysene | 2.88 | 0.167 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Dibenzo(a,h)Anthracene | 3.35 | 0.167 | mg/kg wet | 3.333 | | 100 | 40-140 | | | |
| Fluoranthene | 3.09 | 0.333 | mg/kg wet | 3.333 | | 93 | 40-140 | | | |
| Fluorene | 2.70 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Indeno(1,2,3-cd)Pyrene | 3.33 | 0.333 | mg/kg wet | 3.333 | | 100 | 40-140 | | | |
| Naphthalene | 2.71 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Phenanthrene | 2.81 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | | | |
| Pyrene | 2.89 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 3.19 | | mg/kg wet | 3.333 | | 96 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.45 | | mg/kg wet | 3.333 | | 104 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 3.07 | | mg/kg wet | 3.333 | | 92 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.98 | | mg/kg wet | 3.333 | | 119 | 30-130 | | | |

LCS Dup

| | | | | | | | | | | |
|------------------------|------|-------|-----------|-------|--|----|--------|---|----|--|
| 2-Methylnaphthalene | 2.56 | 0.333 | mg/kg wet | 3.333 | | 77 | 40-140 | 6 | 30 | |
| Acenaphthene | 2.55 | 0.333 | mg/kg wet | 3.333 | | 77 | 40-140 | 3 | 30 | |
| Acenaphthylene | 2.60 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | 3 | 30 | |
| Anthracene | 2.66 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 5 | 30 | |
| Benzo(a)anthracene | 2.84 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | 4 | 30 | |
| Benzo(a)pyrene | 2.76 | 0.167 | mg/kg wet | 3.333 | | 83 | 40-140 | 5 | 30 | |
| Benzo(b)fluoranthene | 3.16 | 0.333 | mg/kg wet | 3.333 | | 95 | 40-140 | 4 | 30 | |
| Benzo(g,h,i)perylene | 3.06 | 0.333 | mg/kg wet | 3.333 | | 92 | 40-140 | 5 | 30 | |
| Benzo(k)fluoranthene | 2.65 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 5 | 30 | |
| Chrysene | 2.76 | 0.167 | mg/kg wet | 3.333 | | 83 | 40-140 | 4 | 30 | |
| Dibenzo(a,h)Anthracene | 3.19 | 0.167 | mg/kg wet | 3.333 | | 96 | 40-140 | 5 | 30 | |
| Fluoranthene | 2.96 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | 4 | 30 | |
| Fluorene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | 2 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 3.17 | 0.333 | mg/kg wet | 3.333 | | 95 | 40-140 | 5 | 30 | |
| Naphthalene | 2.53 | 0.333 | mg/kg wet | 3.333 | | 76 | 40-140 | 7 | 30 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42722 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|---|----|--|
| Phenanthrene | 2.68 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 5 | 30 | |
| Pyrene | 2.77 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | 4 | 30 | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.87 | | mg/kg wet | 3.333 | | 86 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.13 | | mg/kg wet | 3.333 | | 94 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.73 | | mg/kg wet | 3.333 | | 82 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.63 | | mg/kg wet | 3.333 | | 109 | 30-130 | | | |

Classical Chemistry

Batch CE42823 - TCN Prep

| | | | | | | | | | | |
|------------------|------|------|-----------|--------|--|-----|--------|--|--|--|
| Blank | | | | | | | | | | |
| Total Cyanide | ND | 0.02 | mg/kg wet | | | | | | | |
| LCS | | | | | | | | | | |
| Total Cyanide | 0.11 | 0.02 | mg/kg wet | 0.1003 | | 105 | 90-110 | | | |
| Reference | | | | | | | | | | |
| Total Cyanide | 109 | 4.93 | mg/kg wet | 101.0 | | 108 | 31-168 | | | |
| Reference | | | | | | | | | | |
| Total Cyanide | 110 | 4.92 | mg/kg wet | 101.0 | | 109 | 31-168 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

Notes and Definitions

- U Analyte included in the analysis, but not detected
- J Reported between MDL and MRL
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- D Diluted.
- B Present in Method Blank (B).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405579

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 14050579
Date Project Due: 6/3/14
Days For Project: 5 Day

Items to be checked upon receipt:

- | | | | |
|---|-------------------------------|---|---|
| 1. Air Bill Manifest Present? | <input type="checkbox"/> * No | 10. Are the samples properly preserved? | <input type="checkbox"/> Yes |
| Air No.: | | 11. Proper sample containers used? | <input type="checkbox"/> Yes |
| 2. Were Custody Seals Present? | <input type="checkbox"/> No | 12. Any air bubbles in the VOA vials? | <input type="checkbox"/> N/A |
| 3. Were Custody Seals Intact? | <input type="checkbox"/> N/A | 13. Holding times exceeded? | <input type="checkbox"/> No |
| 4. Is Radiation count < 100 CPM? | <input type="checkbox"/> Yes | 14. Sufficient sample volumes? | <input type="checkbox"/> Yes |
| 5. Is a cooler present? | <input type="checkbox"/> Yes | 15. Any Subcontracting needed? | <input type="checkbox"/> No |
| <input type="text" value="Cooler Temp: 4.8"/> | | 16. Are ESS labels on correct containers? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="text" value="Iced With: Ice"/> | | 17. Were samples received intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Was COC included with samples? | <input type="checkbox"/> Yes | ESS Sample IDs: _____ | |
| 7. Was COC signed and dated by client? | <input type="checkbox"/> Yes | Sub Lab: _____ | |
| 8. Does the COC match the sample | <input type="checkbox"/> Yes | Analysis: _____ | |
| 9. Is COC complete and correct? | <input type="checkbox"/> Yes | TAT: _____ | |

18. Was there need to call project manager to discuss status? If yes, please explain.

Re-log of 1405504-02, -08, -11, -13

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 8 oz Soil Jar | 1 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 8 oz Soil Jar | 1 | NP |
| 3 | Yes | 40 ml - VOA | 1 | MeOH |
| 3 | Yes | 8 oz Soil Jar | 1 | NP |
| 4 | Yes | 40 ml - VOA | 1 | MeOH |

Completed By: [Signature]
Reviewed By: MEX

Date/Time: 5/27/14 1217
Date/Time: 5/27/14 1315

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

1405579
 Page 1 of 2

| | | | |
|--|--|--|--|
| Turn Time If faster than 5 days, prior approval by laboratory is required # | Standard <input checked="" type="checkbox"/> Other _____ | Reporting Limits | ESS LAB PROJECT ID 1405504 1405579 |
| State where samples were collected from: MA (R) CT NH NJ NY ME Other _____ | | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ | |
| Is this project for any of the following: MA-MCP Navy USACE Other _____ | | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ | |

| Co. Name GZA GeoEnvironmental | | | Project # T-23 33554.00 | | | Project Name (20 Char. or less) 642 Allens Ave | | | Write Required Analysis | | | | | | | | | | | | |
|----------------------------------|---------|-----------------|-------------------------------|------|--------|---|--|--|-------------------------|----------------------|--------------------|-----|-----|-------|-------|-----|--|--|--|--|--|
| Contact Person Meg Kilpatrick | | | Address 530 Broadway | | | | | | | | | | | | | | | | | | |
| City Providence | | | State RI | | | Zip 02909 | | | PO# | | | | | | | | | | | | |
| Telephone # 401-421-4140 | | | Fax # | | | Email Address MEKilpatrick@gza.com | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | | | Pres Code | Number of Containers | Type of Containers | VOC | PAH | PP-13 | TRIAL | PPH | | | | | |
| 1 | 5-21-14 | 10:35 | | | | GZ-306s S-1A | | | 16 | 2 | vib | X | X | X | X | X | | | | | |
| 2 | | 10:50 | | | | GZ-306s S-2 | | | | | | | | | | | | | | | |
| 3 | | 10:40 | | | | GZ-306s S-3 | | | | | | | | | | | | | | | |
| 4 | | 10:40 | | | | GZ-306s S-1B | | | | | | | | | | | | | | | |
| 5 | | 12:40 | | | | GZ-305s S-2 | | | | | | | | | | | | | | | |
| 6 | | 12:10 | | | | GZ-305s S-3 | | | | | | | | | | | | | | | |
| 7 | | 11:45 | | | | GZ-305s S-1A | | | | | | | | | | | | | | | |
| 8 | | 11:50 | | | | GZ-305s S-1B | | | | | | | | | | | | | | | |
| 9 | | 1420 | | | | GZ-304d - S-1A | | | | | | | | | | | | | | | |
| 10 | | 1425 | | | | GZ-304d - S-1B | | | | | | | | | | | | | | | |

1

2

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | | |
|--|-----------------------|--|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Internal Use Only | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No NA: _____ | [] Pickup | Sampled by: Matt Began / Sophia Markiewicz |
| Cooler Temp: 4.8° ice _{cool} 5/21/14 | [] Technicians _____ | Comments: HOLD ON ALL SAMPLES, NGRID RATES APPLY |

| | | | | | | | |
|------------------------------|--------------|--------------------------|--------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| [Signature] | 5/21/14 1:55 | [Signature] | 5/21/14 1:55 | | | | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| | | | | | | | |

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ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

140557A Page 2 of 2

| | |
|--|---|
| Turn Time <u>Standard</u> Other _____ If faster than 5 days, prior approval by laboratory is required # _____ | Reporting Limits _____ |
| State where samples were collected from: MA <input checked="" type="checkbox"/> CT NH NJ NY ME Other _____ | ESS LAB PROJECT ID 1405504 |
| Is this project for any of the following: MA-MCP Navy USACE Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ |

| Co. Name GZA GeoEnvironmental | | Project # T-23 | | Project Name (20 Char. or less) 33554-w 692 Allen Ave | | | | | | | | | | | | | | | | | | |
|---|---------|--------------------------------|------|---|--------|--|-----------|----------------------|---|-------------------------|---|---|---|---|--|--|--|--|--|--|--|--|
| Contact Person Meg Kilpatrick | | Address 530 Broadway | | | | | | | | | | | | | | | | | | | | |
| City Providence | | State RI | | Zip 02909 | | | | | | | | | | | | | | | | | | |
| Telephone # 401-461-4140 | | Fax # _____ | | Email Address MKilpatrick@ezra.com | | | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | Write Required Analysis | | | | | | | | | | | | |
| 3 11 | 5-29-14 | 14:35 | | | S | GZ-304d P-2 | | | 100 5015N 22015 | X | X | X | X | X | | | | | | | | |
| 12 | 1 | 1445 | | | S | GZ-304d S-3 | | | PAN 15500/82015 | X | X | X | X | X | | | | | | | | |
| 4 15 | 1 | 0800 | | | | TRIP PLANK S0119 | | | PR-13 mtr 66/2005 Tide Gauge 9010B TPA 9100 m | X | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | | |
|--|-------------------------|--|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Internal Use Only _____ | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No NA: _____ | [] Pickup | Sampled by: Matt Began / Sophia Mackiewicz |
| Cooler Temp: 5.1° ice | [] Technicians _____ | Comments: HOLD ON ALL SAMPLES, NPBID RATES APPLY |

| | | | | | | | |
|--|----------------------------------|--|----------------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <i>[Signature]</i> | Date/Time 5/21/14 1555 | Received by: (Signature) <i>[Signature]</i> | Date/Time 5/21/14 1555 | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

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CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554.00 T-23)
ESS Laboratory Work Order Number: 1405585

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 11:52 am, Jun 03, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

SAMPLE RECEIPT

The following samples were received on May 27, 2014 for the analyses specified on the enclosed Chain of Custody Record.

These samples were originally received on hold on May 22, 2014.

| <u>Lab Number</u> | <u>Sample Name</u> | <u>Matrix</u> | <u>Analysis</u> |
|-------------------|--------------------|---------------|---|
| 1405585-01 | GZ-303d S-3 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405585-02 | GZ-302d S-3 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405585-03 | GZ-301d S-3 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405585-04 | Trip Blank 52214 | Soil | 8260B |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

1405585-01 [Present in Method Blank \(B\).](#)
Chloroform
1405585-02 [Present in Method Blank \(B\).](#)
Chloroform
1405585-03 [Present in Method Blank \(B\).](#)
Chloroform
1405585-04 [Present in Method Blank \(B\).](#)
Chloroform

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)
[Semivolatile Organics Internal Standard Information](#)
[Semivolatile Organics Surrogate Information](#)
[Volatile Organics Internal Standard Information](#)
[Volatile Organics Surrogate Information](#)
[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-303d S-3
Date Sampled: 05/22/14 08:50
Percent Solids: 91

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.7) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Arsenic | 6.1 (2.4) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Beryllium | 0.30 (0.10) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Cadmium | ND (0.47) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Chromium | 5.7 (0.9) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Copper | 6.1 (2.4) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Lead | 5.9 (4.7) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Mercury | ND (0.033) | | 7471A | | 1 | JP | 05/28/14 14:13 | 0.65 | 40 | CE42706 |
| Nickel | 6.3 (2.4) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Selenium | ND (4.7) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Silver | ND (0.47) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |
| Thallium | ND (1.17) | | 7841 | | 5 | SVD | 05/30/14 2:00 | 2.33 | 100 | CE42801 |
| Zinc | 15.0 (2.4) | | 6010B | | 1 | KJK | 05/29/14 10:05 | 2.33 | 100 | CE42801 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-303d S-3
Date Sampled: 05/22/14 08:50
Percent Solids: 91
Initial Volume: 23.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0789) | 0.0069 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,1,1-Trichloroethane | ND (0.0394) | 0.0069 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,1,2,2-Tetrachloroethane | ND (0.0394) | 0.0107 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,1,2-Trichloroethane | ND (0.0394) | 0.0099 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,1-Dichloroethane | ND (0.0394) | 0.0063 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,1-Dichloroethene | ND (0.0394) | 0.0097 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,1-Dichloropropene | ND (0.0394) | 0.0061 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,2,3-Trichlorobenzene | ND (0.0394) | 0.0132 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,2,3-Trichloropropane | ND (0.0394) | 0.0098 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,2,4-Trichlorobenzene | ND (0.0394) | 0.0087 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,2,4-Trimethylbenzene | ND (0.0394) | 0.0076 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,2-Dibromo-3-Chloropropane | ND (0.237) | 0.0789 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,2-Dibromoethane | ND (0.0394) | 0.0100 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,2-Dichlorobenzene | ND (0.0394) | 0.0056 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,2-Dichloroethane | ND (0.0394) | 0.0106 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,2-Dichloropropane | ND (0.0394) | 0.0103 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,3,5-Trimethylbenzene | ND (0.0394) | 0.0069 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,3-Dichlorobenzene | ND (0.0394) | 0.0050 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,3-Dichloropropane | ND (0.0394) | 0.0088 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,4-Dichlorobenzene | ND (0.0394) | 0.0105 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1,4-Dioxane - Screen | ND (3.94) | 1.32 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 1-Chlorohexane | ND (0.0394) | 0.0075 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 2,2-Dichloropropane | ND (0.0789) | 0.0135 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 2-Butanone | ND (0.986) | 0.228 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 2-Chlorotoluene | ND (0.0394) | 0.0111 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 2-Hexanone | ND (0.394) | 0.0679 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 4-Chlorotoluene | ND (0.0394) | 0.0051 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 4-Isopropyltoluene | ND (0.0394) | 0.0070 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| 4-Methyl-2-Pentanone | ND (0.394) | 0.0475 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Acetone | ND (0.986) | 0.292 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Benzene | ND (0.0394) | 0.0064 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Bromobenzene | ND (0.0394) | 0.0108 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-303d S-3
Date Sampled: 05/22/14 08:50
Percent Solids: 91
Initial Volume: 23.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0394) | 0.0128 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Bromodichloromethane | ND (0.0394) | 0.0054 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Bromoform | ND (0.0394) | 0.0114 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Bromomethane | ND (0.0789) | 0.0263 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Carbon Disulfide | ND (0.0394) | 0.0058 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Carbon Tetrachloride | ND (0.0394) | 0.0069 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Chlorobenzene | ND (0.0394) | 0.0062 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Chloroethane | ND (0.0789) | 0.0263 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Chloroform | B, J 0.0229 (0.0394) | 0.0081 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Chloromethane | ND (0.0789) | 0.0100 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| cis-1,2-Dichloroethene | ND (0.0394) | 0.0098 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| cis-1,3-Dichloropropene | ND (0.0394) | 0.0089 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Dibromochloromethane | ND (0.0394) | 0.0099 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Dibromomethane | ND (0.0394) | 0.0125 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Dichlorodifluoromethane | ND (0.0394) | 0.0069 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Diethyl Ether | ND (0.0394) | 0.0100 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Di-isopropyl ether | ND (0.0394) | 0.0074 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Ethyl tertiary-butyl ether | ND (0.0394) | 0.0099 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Ethylbenzene | ND (0.0394) | 0.0051 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Hexachlorobutadiene | ND (0.0394) | 0.0132 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Isopropylbenzene | ND (0.0394) | 0.0069 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Methyl tert-Butyl Ether | ND (0.0394) | 0.0063 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Methylene Chloride | ND (0.197) | 0.0103 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Naphthalene | ND (0.0394) | 0.0103 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| n-Butylbenzene | ND (0.0394) | 0.0097 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| n-Propylbenzene | ND (0.0394) | 0.0096 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| sec-Butylbenzene | ND (0.0394) | 0.0053 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Styrene | ND (0.0394) | 0.0052 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| tert-Butylbenzene | ND (0.0394) | 0.0092 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Tertiary-amyl methyl ether | ND (0.0394) | 0.0057 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Tetrachloroethene | ND (0.0394) | 0.0132 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Tetrahydrofuran | ND (0.394) | 0.102 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-303d S-3
Date Sampled: 05/22/14 08:50
Percent Solids: 91
Initial Volume: 23.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0394) | 0.0100 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| trans-1,2-Dichloroethene | ND (0.0394) | 0.0129 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| trans-1,3-Dichloropropene | ND (0.0394) | 0.0121 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Trichloroethene | ND (0.0394) | 0.0081 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Trichlorofluoromethane | ND (0.0394) | 0.0104 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Vinyl Acetate | ND (0.197) | 0.0081 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Vinyl Chloride | ND (0.0394) | 0.0130 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Xylene O | ND (0.0394) | 0.0076 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Xylene P,M | ND (0.0789) | 0.0153 | 8260B | | 1 | 05/30/14 14:59 | CXE0430 | CE43040 |
| Xylenes (Total) | ND (0.0789) | | 8260B | | 1 | 05/30/14 14:59 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>99 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>104 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>106 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>108 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-303d S-3
Date Sampled: 05/22/14 08:50
Percent Solids: 91
Initial Volume: 19.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/27/14 17:36

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | ND (41.6) | | 8100M | | 1 | 05/28/14 15:55 | CXE0382 | CE42721 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>84 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-303d S-3
Date Sampled: 05/22/14 08:50
Percent Solids: 91
Initial Volume: 15.1
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/27/14 17:36

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Acenaphthene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Acenaphthylene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Anthracene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Benzo(a)anthracene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Benzo(a)pyrene | ND (0.182) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Benzo(b)fluoranthene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Benzo(g,h,i)perylene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Benzo(k)fluoranthene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Chrysene | ND (0.182) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Dibenzo(a,h)Anthracene | ND (0.182) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Fluoranthene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Fluorene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Indeno(1,2,3-cd)Pyrene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Naphthalene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Phenanthrene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |
| Pyrene | ND (0.363) | | 8270C | | 1 | 05/29/14 0:19 | CXE0390 | CE42722 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | <i>86 %</i> | | <i>30-130</i> |
| <i>Surrogate: 2-Fluorobiphenyl</i> | <i>97 %</i> | | <i>30-130</i> |
| <i>Surrogate: Nitrobenzene-d5</i> | <i>81 %</i> | | <i>30-130</i> |
| <i>Surrogate: p-Terphenyl-d14</i> | <i>121 %</i> | | <i>30-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-303d S-3
Date Sampled: 05/22/14 08:50
Percent Solids: 91

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-01
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.08) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-302d S-3
Date Sampled: 05/22/14 10:20
Percent Solids: 95

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | 7.5 (4.5) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |
| Arsenic | 17.1 (2.2) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |
| Beryllium | 0.46 (0.09) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |
| Cadmium | ND (0.45) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |
| Chromium | 11.0 (0.9) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |
| Copper | 17.4 (2.2) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |
| Lead | 9.7 (4.5) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |
| Mercury | ND (0.034) | | 7471A | | 1 | JP | 05/28/14 14:16 | 0.62 | 40 | CE42706 |
| Nickel | 16.7 (2.2) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |
| Selenium | ND (13.4) | | 6010B | | 3 | KJK | 05/29/14 20:31 | 2.36 | 100 | CE42801 |
| Silver | 0.90 (0.45) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |
| Thallium | ND (1.11) | | 7841 | | 5 | SVD | 05/30/14 2:07 | 2.36 | 100 | CE42801 |
| Zinc | 37.1 (2.2) | | 6010B | | 1 | KJK | 05/29/14 10:09 | 2.36 | 100 | CE42801 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-302d S-3
Date Sampled: 05/22/14 10:20
Percent Solids: 95
Initial Volume: 24.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0696) | 0.0061 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,1,1-Trichloroethane | ND (0.0348) | 0.0061 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,1,2,2-Tetrachloroethane | ND (0.0348) | 0.0095 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,1,2-Trichloroethane | ND (0.0348) | 0.0087 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,1-Dichloroethane | ND (0.0348) | 0.0056 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,1-Dichloroethene | ND (0.0348) | 0.0086 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,1-Dichloropropene | ND (0.0348) | 0.0054 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,2,3-Trichlorobenzene | ND (0.0348) | 0.0116 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,2,3-Trichloropropane | ND (0.0348) | 0.0086 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,2,4-Trichlorobenzene | ND (0.0348) | 0.0077 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,2,4-Trimethylbenzene | ND (0.0348) | 0.0067 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,2-Dibromo-3-Chloropropane | ND (0.209) | 0.0696 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,2-Dibromoethane | ND (0.0348) | 0.0088 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,2-Dichlorobenzene | ND (0.0348) | 0.0049 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,2-Dichloroethane | ND (0.0348) | 0.0093 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,2-Dichloropropane | ND (0.0348) | 0.0091 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,3,5-Trimethylbenzene | ND (0.0348) | 0.0061 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,3-Dichlorobenzene | ND (0.0348) | 0.0044 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,3-Dichloropropane | ND (0.0348) | 0.0078 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,4-Dichlorobenzene | ND (0.0348) | 0.0093 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1,4-Dioxane - Screen | ND (3.48) | 1.16 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 1-Chlorohexane | ND (0.0348) | 0.0066 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 2,2-Dichloropropane | ND (0.0696) | 0.0119 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 2-Butanone | ND (0.870) | 0.201 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 2-Chlorotoluene | ND (0.0348) | 0.0098 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 2-Hexanone | ND (0.348) | 0.0599 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 4-Chlorotoluene | ND (0.0348) | 0.0045 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 4-Isopropyltoluene | ND (0.0348) | 0.0062 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| 4-Methyl-2-Pentanone | ND (0.348) | 0.0419 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Acetone | ND (0.870) | 0.258 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Benzene | ND (0.0348) | 0.0056 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Bromobenzene | ND (0.0348) | 0.0095 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-302d S-3
Date Sampled: 05/22/14 10:20
Percent Solids: 95
Initial Volume: 24.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0348) | 0.0113 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Bromodichloromethane | ND (0.0348) | 0.0048 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Bromoform | ND (0.0348) | 0.0100 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Bromomethane | ND (0.0696) | 0.0233 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Carbon Disulfide | ND (0.0348) | 0.0052 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Carbon Tetrachloride | ND (0.0348) | 0.0061 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Chlorobenzene | ND (0.0348) | 0.0055 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Chloroethane | ND (0.0696) | 0.0232 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Chloroform | B, J 0.0146 (0.0348) | 0.0072 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Chloromethane | ND (0.0696) | 0.0088 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| cis-1,2-Dichloroethene | ND (0.0348) | 0.0086 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| cis-1,3-Dichloropropene | ND (0.0348) | 0.0079 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Dibromochloromethane | ND (0.0348) | 0.0088 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Dibromomethane | ND (0.0348) | 0.0110 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Dichlorodifluoromethane | ND (0.0348) | 0.0061 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Diethyl Ether | ND (0.0348) | 0.0088 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Di-isopropyl ether | ND (0.0348) | 0.0065 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Ethyl tertiary-butyl ether | ND (0.0348) | 0.0088 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Ethylbenzene | ND (0.0348) | 0.0045 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Hexachlorobutadiene | ND (0.0348) | 0.0116 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Isopropylbenzene | ND (0.0348) | 0.0061 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Methyl tert-Butyl Ether | ND (0.0348) | 0.0056 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Methylene Chloride | ND (0.174) | 0.0091 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Naphthalene | ND (0.0348) | 0.0091 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| n-Butylbenzene | ND (0.0348) | 0.0086 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| n-Propylbenzene | ND (0.0348) | 0.0085 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| sec-Butylbenzene | ND (0.0348) | 0.0047 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Styrene | ND (0.0348) | 0.0046 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| tert-Butylbenzene | ND (0.0348) | 0.0081 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Tertiary-amyl methyl ether | ND (0.0348) | 0.0050 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Tetrachloroethene | ND (0.0348) | 0.0116 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Tetrahydrofuran | ND (0.348) | 0.0898 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-302d S-3
Date Sampled: 05/22/14 10:20
Percent Solids: 95
Initial Volume: 24.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0348) | 0.0088 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| trans-1,2-Dichloroethene | ND (0.0348) | 0.0114 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| trans-1,3-Dichloropropene | ND (0.0348) | 0.0107 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Trichloroethene | ND (0.0348) | 0.0072 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Trichlorofluoromethane | ND (0.0348) | 0.0092 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Vinyl Acetate | ND (0.174) | 0.0072 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Vinyl Chloride | ND (0.0348) | 0.0115 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Xylene O | ND (0.0348) | 0.0067 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Xylene P,M | ND (0.0696) | 0.0135 | 8260B | | 1 | 05/30/14 15:27 | CXE0430 | CE43040 |
| Xylenes (Total) | ND (0.0696) | | 8260B | | 1 | 05/30/14 15:27 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>107 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>110 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>111 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>113 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-302d S-3
Date Sampled: 05/22/14 10:20
Percent Solids: 95
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/27/14 17:36

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | ND (40.8) | | 8100M | | 1 | 05/28/14 16:34 | CXE0382 | CE42721 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 85 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-302d S-3
Date Sampled: 05/22/14 10:20
Percent Solids: 95
Initial Volume: 14.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/27/14 17:36

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Acenaphthene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Acenaphthylene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Anthracene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Benzo(a)anthracene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Benzo(a)pyrene | ND (0.182) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Benzo(b)fluoranthene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Benzo(g,h,i)perylene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Benzo(k)fluoranthene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Chrysene | ND (0.182) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Dibenzo(a,h)Anthracene | ND (0.182) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Fluoranthene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Fluorene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Indeno(1,2,3-cd)Pyrene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Naphthalene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Phenanthrene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |
| Pyrene | ND (0.364) | | 8270C | | 1 | 05/29/14 0:53 | CXE0390 | CE42722 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 84 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 92 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 80 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 121 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-302d S-3
Date Sampled: 05/22/14 10:20
Percent Solids: 95

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-02
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.02) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-301d S-3
Date Sampled: 05/22/14 14:00
Percent Solids: 84

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.8) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |
| Arsenic | 10.2 (2.4) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |
| Beryllium | 0.26 (0.10) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |
| Cadmium | ND (0.48) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |
| Chromium | 3.2 (1.0) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |
| Copper | 50.6 (2.4) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |
| Lead | 1550 (9.6) | | 6010B | | 2 | KJK | 05/29/14 20:35 | 2.47 | 100 | CE42801 |
| Mercury | 0.040 (0.038) | | 7471A | | 1 | JP | 05/28/14 14:19 | 0.61 | 40 | CE42706 |
| Nickel | 11.6 (2.4) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |
| Selenium | ND (4.8) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |
| Silver | ND (0.48) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |
| Thallium | ND (1.19) | | 7841 | | 5 | SVD | 05/30/14 2:13 | 2.47 | 100 | CE42801 |
| Zinc | 229 (2.4) | | 6010B | | 1 | KJK | 05/29/14 10:13 | 2.47 | 100 | CE42801 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-301d S-3
 Date Sampled: 05/22/14 14:00
 Percent Solids: 84
 Initial Volume: 17.9
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405585
 ESS Laboratory Sample ID: 1405585-03
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.118) | 0.0102 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,1,1-Trichloroethane | ND (0.0588) | 0.0104 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,1,2,2-Tetrachloroethane | ND (0.0588) | 0.0160 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,1,2-Trichloroethane | ND (0.0588) | 0.0147 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,1-Dichloroethane | ND (0.0588) | 0.0094 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,1-Dichloroethene | ND (0.0588) | 0.0145 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,1-Dichloropropene | ND (0.0588) | 0.0091 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,2,3-Trichlorobenzene | ND (0.0588) | 0.0197 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,2,3-Trichloropropane | ND (0.0588) | 0.0146 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,2,4-Trichlorobenzene | ND (0.0588) | 0.0129 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,2,4-Trimethylbenzene | ND (0.0588) | 0.0113 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,2-Dibromo-3-Chloropropane | ND (0.353) | 0.118 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,2-Dibromoethane | ND (0.0588) | 0.0149 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,2-Dichlorobenzene | ND (0.0588) | 0.0084 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,2-Dichloroethane | ND (0.0588) | 0.0158 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,2-Dichloropropane | ND (0.0588) | 0.0154 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,3,5-Trimethylbenzene | ND (0.0588) | 0.0104 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,3-Dichlorobenzene | ND (0.0588) | 0.0074 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,3-Dichloropropane | ND (0.0588) | 0.0132 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,4-Dichlorobenzene | ND (0.0588) | 0.0156 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1,4-Dioxane - Screen | ND (5.88) | 1.97 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 1-Chlorohexane | ND (0.0588) | 0.0112 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 2,2-Dichloropropane | ND (0.118) | 0.0201 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 2-Butanone | ND (1.47) | 0.340 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 2-Chlorotoluene | ND (0.0588) | 0.0166 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 2-Hexanone | ND (0.588) | 0.101 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 4-Chlorotoluene | ND (0.0588) | 0.0076 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 4-Isopropyltoluene | ND (0.0588) | 0.0105 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| 4-Methyl-2-Pentanone | ND (0.588) | 0.0708 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Acetone | ND (1.47) | 0.435 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Benzene | ND (0.0588) | 0.0095 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Bromobenzene | ND (0.0588) | 0.0161 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-301d S-3
Date Sampled: 05/22/14 14:00
Percent Solids: 84
Initial Volume: 17.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0588) | 0.0191 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Bromodichloromethane | ND (0.0588) | 0.0081 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Bromoform | ND (0.0588) | 0.0169 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Bromomethane | ND (0.118) | 0.0393 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Carbon Disulfide | ND (0.0588) | 0.0087 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Carbon Tetrachloride | ND (0.0588) | 0.0102 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Chlorobenzene | ND (0.0588) | 0.0093 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Chloroethane | ND (0.118) | 0.0392 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Chloroform | B, J 0.0224 (0.0588) | 0.0121 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Chloromethane | ND (0.118) | 0.0149 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| cis-1,2-Dichloroethene | ND (0.0588) | 0.0146 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| cis-1,3-Dichloropropene | ND (0.0588) | 0.0133 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Dibromochloromethane | ND (0.0588) | 0.0148 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Dibromomethane | ND (0.0588) | 0.0186 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Dichlorodifluoromethane | ND (0.0588) | 0.0102 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Diethyl Ether | ND (0.0588) | 0.0149 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Di-isopropyl ether | ND (0.0588) | 0.0111 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Ethyl tertiary-butyl ether | ND (0.0588) | 0.0148 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Ethylbenzene | ND (0.0588) | 0.0076 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Hexachlorobutadiene | ND (0.0588) | 0.0197 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Isopropylbenzene | ND (0.0588) | 0.0104 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Methyl tert-Butyl Ether | ND (0.0588) | 0.0094 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Methylene Chloride | ND (0.294) | 0.0154 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Naphthalene | J 0.0259 (0.0588) | 0.0154 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| n-Butylbenzene | ND (0.0588) | 0.0145 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| n-Propylbenzene | ND (0.0588) | 0.0144 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| sec-Butylbenzene | ND (0.0588) | 0.0079 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Styrene | ND (0.0588) | 0.0078 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| tert-Butylbenzene | ND (0.0588) | 0.0138 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Tertiary-amyl methyl ether | ND (0.0588) | 0.0085 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Tetrachloroethene | ND (0.0588) | 0.0197 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Tetrahydrofuran | ND (0.588) | 0.152 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-301d S-3
Date Sampled: 05/22/14 14:00
Percent Solids: 84
Initial Volume: 17.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0588) | 0.0149 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| trans-1,2-Dichloroethene | ND (0.0588) | 0.0193 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| trans-1,3-Dichloropropene | ND (0.0588) | 0.0181 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Trichloroethene | ND (0.0588) | 0.0121 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Trichlorofluoromethane | ND (0.0588) | 0.0155 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Vinyl Acetate | ND (0.294) | 0.0121 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Vinyl Chloride | ND (0.0588) | 0.0194 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Xylene O | ND (0.0588) | 0.0113 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Xylene P,M | ND (0.118) | 0.0228 | 8260B | | 1 | 05/30/14 15:55 | CXE0430 | CE43040 |
| Xylenes (Total) | ND (0.118) | | 8260B | | 1 | 05/30/14 15:55 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>115 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>119 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>121 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>124 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-301d S-3
Date Sampled: 05/22/14 14:00
Percent Solids: 84
Initial Volume: 19.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/27/14 17:36

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 971 (44.9) | | 8100M | | 1 | 05/28/14 17:13 | CXE0382 | CE42721 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 59 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-301d S-3
Date Sampled: 05/22/14 14:00
Percent Solids: 84
Initial Volume: 14.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/27/14 17:36

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Acenaphthene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Acenaphthylene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Anthracene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Benzo(a)anthracene | 0.454 (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Benzo(a)pyrene | 0.269 (0.203) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Benzo(b)fluoranthene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Benzo(g,h,i)perylene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Benzo(k)fluoranthene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Chrysene | 0.624 (0.203) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Dibenzo(a,h)Anthracene | ND (0.203) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Fluoranthene | 0.505 (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Fluorene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Indeno(1,2,3-cd)Pyrene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Naphthalene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Phenanthrene | ND (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |
| Pyrene | 0.551 (0.405) | | 8270C | | 1 | 05/29/14 1:27 | CXE0390 | CE42722 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 72 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 92 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 73 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 104 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-301d S-3
Date Sampled: 05/22/14 14:00
Percent Solids: 84

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-03
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | 1.62 (1.18) | | 9014 | | 1 | JLK | 05/28/14 13:52 | mg/kg dry | CE42823 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank 52214
Date Sampled: 05/22/14 07:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-04
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.100) | 0.0087 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,1,1-Trichloroethane | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,1,2,2-Tetrachloroethane | ND (0.0500) | 0.0136 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,1,2-Trichloroethane | ND (0.0500) | 0.0125 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,1-Dichloroethane | ND (0.0500) | 0.0080 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,1-Dichloroethene | ND (0.0500) | 0.0123 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,1-Dichloropropene | ND (0.0500) | 0.0077 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,2,3-Trichlorobenzene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,2,3-Trichloropropane | ND (0.0500) | 0.0124 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,2,4-Trichlorobenzene | ND (0.0500) | 0.0110 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,2,4-Trimethylbenzene | ND (0.0500) | 0.0096 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,2-Dibromo-3-Chloropropane | ND (0.300) | 0.100 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,2-Dibromoethane | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,2-Dichlorobenzene | ND (0.0500) | 0.0071 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,2-Dichloroethane | ND (0.0500) | 0.0134 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,2-Dichloropropane | ND (0.0500) | 0.0131 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,3,5-Trimethylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,3-Dichlorobenzene | ND (0.0500) | 0.0063 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,3-Dichloropropane | ND (0.0500) | 0.0112 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,4-Dichlorobenzene | ND (0.0500) | 0.0133 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1,4-Dioxane - Screen | ND (5.00) | 1.67 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 1-Chlorohexane | ND (0.0500) | 0.0095 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 2,2-Dichloropropane | ND (0.100) | 0.0171 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 2-Butanone | ND (1.25) | 0.289 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 2-Chlorotoluene | ND (0.0500) | 0.0141 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 2-Hexanone | ND (0.500) | 0.0861 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 4-Chlorotoluene | ND (0.0500) | 0.0065 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 4-Isopropyltoluene | ND (0.0500) | 0.0089 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| 4-Methyl-2-Pentanone | ND (0.500) | 0.0602 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Acetone | ND (1.25) | 0.370 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Benzene | ND (0.0500) | 0.0081 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Bromobenzene | ND (0.0500) | 0.0137 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank 52214
Date Sampled: 05/22/14 07:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405585
ESS Laboratory Sample ID: 1405585-04
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0500) | 0.0162 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Bromodichloromethane | ND (0.0500) | 0.0069 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Bromoform | ND (0.0500) | 0.0144 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Bromomethane | ND (0.100) | 0.0334 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Carbon Disulfide | ND (0.0500) | 0.0074 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Carbon Tetrachloride | ND (0.0500) | 0.0087 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Chlorobenzene | ND (0.0500) | 0.0079 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Chloroethane | ND (0.100) | 0.0333 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Chloroform | B, J 0.0210 (0.0500) | 0.0103 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Chloromethane | ND (0.100) | 0.0127 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| cis-1,2-Dichloroethene | ND (0.0500) | 0.0124 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| cis-1,3-Dichloropropene | ND (0.0500) | 0.0113 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Dibromochloromethane | ND (0.0500) | 0.0126 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Dibromomethane | ND (0.0500) | 0.0158 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Dichlorodifluoromethane | ND (0.0500) | 0.0087 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Diethyl Ether | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Di-isopropyl ether | ND (0.0500) | 0.0094 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Ethyl tertiary-butyl ether | ND (0.0500) | 0.0126 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Ethylbenzene | ND (0.0500) | 0.0065 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Hexachlorobutadiene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Isopropylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Methyl tert-Butyl Ether | ND (0.0500) | 0.0080 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Methylene Chloride | ND (0.250) | 0.0131 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Naphthalene | ND (0.0500) | 0.0131 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| n-Butylbenzene | ND (0.0500) | 0.0123 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| n-Propylbenzene | ND (0.0500) | 0.0122 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| sec-Butylbenzene | ND (0.0500) | 0.0067 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Styrene | ND (0.0500) | 0.0066 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| tert-Butylbenzene | ND (0.0500) | 0.0117 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Tertiary-amyl methyl ether | ND (0.0500) | 0.0072 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Tetrachloroethene | ND (0.0500) | 0.0167 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Tetrahydrofuran | ND (0.500) | 0.129 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: Trip Blank 52214
 Date Sampled: 05/22/14 07:00
 Percent Solids: N/A
 Initial Volume: 15
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405585
 ESS Laboratory Sample ID: 1405585-04
 Sample Matrix: Soil
 Units: mg/kg wet
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0500) | 0.0127 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| trans-1,2-Dichloroethene | ND (0.0500) | 0.0164 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| trans-1,3-Dichloropropene | ND (0.0500) | 0.0154 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Trichloroethene | ND (0.0500) | 0.0103 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Trichlorofluoromethane | ND (0.0500) | 0.0132 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Vinyl Acetate | ND (0.250) | 0.0103 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Vinyl Chloride | ND (0.0500) | 0.0165 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Xylene O | ND (0.0500) | 0.0096 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Xylene P,M | ND (0.100) | 0.0194 | 8260B | | 1 | 05/30/14 14:03 | CXE0430 | CE43040 |
| Xylenes (Total) | ND (0.100) | | 8260B | | 1 | 05/30/14 14:03 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>96 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>99 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>101 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>102 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42706 - 7471A

Blank

Mercury ND 0.033 mg/kg wet

LCS

Mercury 3.88 1.60 mg/kg wet 3.980 98 80-120

LCS Dup

Mercury 4.05 1.52 mg/kg wet 3.980 102 80-120 4 20

Batch CE42801 - 3050B

Blank

Antimony ND 5.0 mg/kg wet
 Arsenic ND 2.5 mg/kg wet
 Beryllium ND 0.10 mg/kg wet
 Cadmium ND 0.50 mg/kg wet
 Chromium ND 1.0 mg/kg wet
 Copper ND 2.5 mg/kg wet
 Lead ND 5.0 mg/kg wet
 Nickel ND 2.5 mg/kg wet
 Selenium ND 5.0 mg/kg wet
 Silver ND 0.50 mg/kg wet
 Thallium ND 0.25 mg/kg wet
 Zinc ND 2.5 mg/kg wet

LCS

Antimony 98.3 15.9 mg/kg wet 116.0 85 80-120
 Arsenic 113 7.9 mg/kg wet 122.0 93 80-120
 Beryllium 48.9 0.33 mg/kg wet 54.30 90 80-120
 Cadmium 74.0 1.60 mg/kg wet 88.00 84 80-120
 Chromium 87.6 3.2 mg/kg wet 102.0 86 80-120
 Copper 68.6 7.9 mg/kg wet 78.00 88 80-120
 Lead 82.9 15.9 mg/kg wet 94.50 88 80-120
 Nickel 49.4 7.9 mg/kg wet 56.30 88 80-120
 Selenium 131 15.9 mg/kg wet 157.0 84 80-120
 Silver 31.2 1.60 mg/kg wet 34.20 91 80-120
 Thallium 102 39.3 mg/kg wet 116.0 88 80-120
 Zinc 175 7.9 mg/kg wet 207.0 84 80-120

LCS Dup

Antimony 101 16.1 mg/kg wet 116.0 87 80-120 3 20
 Arsenic 114 8.1 mg/kg wet 122.0 94 80-120 0.6 20
 Beryllium 49.2 0.34 mg/kg wet 54.30 91 80-120 0.7 20
 Cadmium 77.1 1.62 mg/kg wet 88.00 88 80-120 4 20
 Chromium 88.7 3.2 mg/kg wet 102.0 87 80-120 1 20
 Copper 69.6 8.1 mg/kg wet 78.00 89 80-120 2 20
 Lead 84.2 16.1 mg/kg wet 94.50 89 80-120 2 20
 Nickel 50.9 8.1 mg/kg wet 56.30 90 80-120 3 20
 Selenium 132 16.1 mg/kg wet 157.0 84 80-120 0.8 20
 Silver 31.4 1.62 mg/kg wet 34.20 92 80-120 0.7 20



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42801 - 3050B

| | | | | | | | | | | |
|----------|-----|------|-----------|-------|--|----|--------|-----|----|--|
| Thallium | 107 | 39.9 | mg/kg wet | 116.0 | | 92 | 80-120 | 5 | 20 | |
| Zinc | 175 | 8.1 | mg/kg wet | 207.0 | | 85 | 80-120 | 0.2 | 20 | |

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

Blank

| | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|-----|--------|--|--|---|
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0250 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | 0.0280 | 0.250 | mg/kg wet | | | | | | | J |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.47 | | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.52 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.56 | | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.58 | | mg/kg wet | 2.500 | | 103 | 70-130 | | | |

LCS

| | | | | | | | | | | |
|---------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.47 | 0.100 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,1-Dichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,1-Dichloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1-Dichloropropene | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,2,3-Trichlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.58 | 0.300 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,2-Dibromoethane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 1,2-Dichloroethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dichloropropane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,3-Dichloropropane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,4-Dioxane - Screen | 62.1 | 5.00 | mg/kg wet | 50.00 | | 124 | 44-241 | | | |
| 1-Chlorohexane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 2,2-Dichloropropane | 2.48 | 0.100 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 2-Butanone | 12.5 | 1.25 | mg/kg wet | 12.50 | | 100 | 70-130 | | | |
| 2-Chlorotoluene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 2-Hexanone | 12.2 | 0.500 | mg/kg wet | 12.50 | | 97 | 70-130 | | | |
| 4-Chlorotoluene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 4-Isopropyltoluene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 13.4 | 0.500 | mg/kg wet | 12.50 | | 107 | 70-130 | | | |
| Acetone | 12.3 | 1.25 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| Benzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Bromobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Bromochloromethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Bromodichloromethane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Bromoform | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| Bromomethane | 2.77 | 0.100 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Carbon Disulfide | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Carbon Tetrachloride | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Chlorobenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Chloroethane | 2.22 | 0.100 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Chloroform | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Chloromethane | 2.56 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.77 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Dibromochloromethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Dibromomethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Dichlorodifluoromethane | 2.22 | 0.0500 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Diethyl Ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Di-isopropyl ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Ethylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Hexachlorobutadiene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Isopropylbenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Methylene Chloride | 2.60 | 0.250 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Naphthalene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| n-Butylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| n-Propylbenzene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| sec-Butylbenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Styrene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| tert-Butylbenzene | 2.88 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Tetrachloroethene | 1.82 | 0.0500 | mg/kg wet | 2.500 | | 73 | 70-130 | | | |
| Tetrahydrofuran | 2.77 | 0.500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Toluene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Trichloroethene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Vinyl Acetate | 2.93 | 0.250 | mg/kg wet | 2.500 | | 117 | 70-130 | | | |
| Vinyl Chloride | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Xylene O | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Xylene P,M | 5.15 | 0.100 | mg/kg wet | 5.000 | | 103 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.50 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.49 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.47 | | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.56 | | mg/kg wet | 2.500 | | 102 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|------|----|--|
| 1,1,1,2-Tetrachloroethane | 2.46 | 0.100 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.3 | 25 | |
| 1,1,1-Trichloroethane | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 1 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 0.4 | 25 | |
| 1,1,2-Trichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| 1,1-Dichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.08 | 25 | |
| 1,1-Dichloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.2 | 25 | |
| 1,1-Dichloropropene | 2.85 | 0.0500 | mg/kg wet | 2.500 | | 114 | 70-130 | 3 | 25 | |
| 1,2,3-Trichlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.2 | 25 | |
| 1,2,3-Trichloropropane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| 1,2,4-Trichlorobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| 1,2,4-Trimethylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.8 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.46 | 0.300 | mg/kg wet | 2.500 | | 99 | 70-130 | 5 | 25 | |
| 1,2-Dibromoethane | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| 1,2-Dichlorobenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.7 | 25 | |
| 1,2-Dichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 3 | 25 | |
| 1,2-Dichloropropane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.08 | 25 | |
| 1,3,5-Trimethylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| 1,3-Dichlorobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.6 | 25 | |
| 1,3-Dichloropropane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| 1,4-Dichlorobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|------|-----|--|
| 1,4-Dioxane - Screen | 55.0 | 5.00 | mg/kg wet | 50.00 | | 110 | 44-241 | 12 | 200 | |
| 1-Chlorohexane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 3 | 25 | |
| 2,2-Dichloropropane | 2.49 | 0.100 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.4 | 25 | |
| 2-Butanone | 12.1 | 1.25 | mg/kg wet | 12.50 | | 97 | 70-130 | 3 | 25 | |
| 2-Chlorotoluene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 1 | 25 | |
| 2-Hexanone | 11.8 | 0.500 | mg/kg wet | 12.50 | | 94 | 70-130 | 3 | 25 | |
| 4-Chlorotoluene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.5 | 25 | |
| 4-Isopropyltoluene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.7 | 25 | |
| 4-Methyl-2-Pentanone | 12.6 | 0.500 | mg/kg wet | 12.50 | | 101 | 70-130 | 6 | 25 | |
| Acetone | 12.1 | 1.25 | mg/kg wet | 12.50 | | 97 | 70-130 | 1 | 25 | |
| Benzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.9 | 25 | |
| Bromobenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.6 | 25 | |
| Bromochloromethane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 1 | 25 | |
| Bromodichloromethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Bromoform | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.7 | 25 | |
| Bromomethane | 2.72 | 0.100 | mg/kg wet | 2.500 | | 109 | 70-130 | 2 | 25 | |
| Carbon Disulfide | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| Carbon Tetrachloride | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 1 | 25 | |
| Chlorobenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.8 | 25 | |
| Chloroethane | 2.24 | 0.100 | mg/kg wet | 2.500 | | 90 | 70-130 | 0.8 | 25 | |
| Chloroform | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.2 | 25 | |
| Chloromethane | 2.59 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.9 | 25 | |
| cis-1,2-Dichloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| cis-1,3-Dichloropropene | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 1 | 25 | |
| Dibromochloromethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.07 | 25 | |
| Dibromomethane | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| Dichlorodifluoromethane | 2.26 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | 2 | 25 | |
| Diethyl Ether | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.2 | 25 | |
| Di-isopropyl ether | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| Ethyl tertiary-butyl ether | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| Ethylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.08 | 25 | |
| Hexachlorobutadiene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 3 | 25 | |
| Isopropylbenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.7 | 25 | |
| Methyl tert-Butyl Ether | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| Methylene Chloride | 2.58 | 0.250 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.6 | 25 | |
| Naphthalene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| n-Butylbenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| n-Propylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| sec-Butylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| Styrene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.4 | 25 | |
| tert-Butylbenzene | 2.88 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | 0.1 | 25 | |
| Tertiary-amyl methyl ether | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| Tetrachloroethene | 1.85 | 0.0500 | mg/kg wet | 2.500 | | 74 | 70-130 | 2 | 25 | |
| Tetrahydrofuran | 2.55 | 0.500 | mg/kg wet | 2.500 | | 102 | 70-130 | 8 | 25 | |
| Toluene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.6 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CE43040 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| trans-1,2-Dichloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.2 | 25 | |
| trans-1,3-Dichloropropene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 0.8 | 25 | |
| Trichloroethene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 1 | 25 | |
| Vinyl Acetate | 2.86 | 0.250 | mg/kg wet | 2.500 | | 114 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.9 | 25 | |
| Xylene O | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 3 | 25 | |
| Xylene P,M | 5.26 | 0.100 | mg/kg wet | 5.000 | | 105 | 70-130 | 2 | 25 | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.42 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.42 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.43 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.53 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |

8100M Total Petroleum Hydrocarbons

Batch CE42721 - 3546

Blank

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacontane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |
| Surrogate: O-Terphenyl | 4.33 | | mg/kg wet | 5.000 | | 87 | 40-140 | | | |

LCS

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 75 | 40-140 | | | |
| Docosane (C22) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 83 | 40-140 | | | |
| Eicosane (C20) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | | | |
| Hexacosane (C26) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 83 | 40-140 | | | |
| Nonadecane (C19) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Nonane (C9) | 1.8 | 0.2 | mg/kg wet | 2.500 | | 71 | 30-140 | | | |
| Octacosane (C28) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Octadecane (C18) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Tetracosane (C24) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Tetradecane (C14) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 82 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 32.8 | 37.5 | mg/kg wet | 35.00 | | 94 | 40-140 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8100M Total Petroleum Hydrocarbons

Batch CE42721 - 3546

| | | | | | | | | | | |
|-------------------------------|------|------|-----------|-------|--|----|--------|---|----|--|
| Triacontane (C30) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | | | |
| <i>Surrogate: O-Terphenyl</i> | 4.39 | | mg/kg wet | 5.000 | | 88 | 40-140 | | | |
| LCS Dup | | | | | | | | | | |
| Decane (C10) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 77 | 40-140 | 2 | 25 | |
| Docosane (C22) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 2 | 25 | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 84 | 40-140 | 2 | 25 | |
| Eicosane (C20) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | 2 | 25 | |
| Hexacosane (C26) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 2 | 25 | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 84 | 40-140 | 2 | 25 | |
| Nonadecane (C19) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 5 | 25 | |
| Nonane (C9) | 1.7 | 0.2 | mg/kg wet | 2.500 | | 69 | 30-140 | 2 | 25 | |
| Octacosane (C28) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | 2 | 25 | |
| Octadecane (C18) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | 2 | 25 | |
| Tetracosane (C24) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | 1 | 25 | |
| Tetradecane (C14) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | 4 | 25 | |
| Total Petroleum Hydrocarbons | 33.5 | 37.5 | mg/kg wet | 35.00 | | 96 | 40-140 | 2 | 25 | |
| Triacontane (C30) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | 2 | 25 | |
| <i>Surrogate: O-Terphenyl</i> | 4.39 | | mg/kg wet | 5.000 | | 88 | 40-140 | | | |

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42722 - 3546

| Blank | | | | | | | | | | |
|--|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)pyrene | ND | 0.167 | mg/kg wet | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Chrysene | ND | 0.167 | mg/kg wet | | | | | | | |
| Dibenzo(a,h)Anthracene | ND | 0.167 | mg/kg wet | | | | | | | |
| Fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Fluorene | ND | 0.333 | mg/kg wet | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Phenanthrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 3.43 | | mg/kg wet | 3.333 | | 103 | 30-130 | | | |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 3.68 | | mg/kg wet | 3.333 | | 110 | 30-130 | | | |
| <i>Surrogate: Nitrobenzene-d5</i> | 3.17 | | mg/kg wet | 3.333 | | 95 | 30-130 | | | |
| <i>Surrogate: p-Terphenyl-d14</i> | 4.19 | | mg/kg wet | 3.333 | | 126 | 30-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE42722 - 3546

LCS

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | 2.72 | 0.333 | mg/kg wet | 3.333 | | 82 | 40-140 | | | |
| Acenaphthene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | | | |
| Acenaphthylene | 2.69 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Anthracene | 2.80 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | | | |
| Benzo(a)anthracene | 2.96 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | | | |
| Benzo(a)pyrene | 2.89 | 0.167 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Benzo(b)fluoranthene | 3.30 | 0.333 | mg/kg wet | 3.333 | | 99 | 40-140 | | | |
| Benzo(g,h,i)perylene | 3.24 | 0.333 | mg/kg wet | 3.333 | | 97 | 40-140 | | | |
| Benzo(k)fluoranthene | 2.78 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | | | |
| Chrysene | 2.88 | 0.167 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Dibenzo(a,h)Anthracene | 3.35 | 0.167 | mg/kg wet | 3.333 | | 100 | 40-140 | | | |
| Fluoranthene | 3.09 | 0.333 | mg/kg wet | 3.333 | | 93 | 40-140 | | | |
| Fluorene | 2.70 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Indeno(1,2,3-cd)Pyrene | 3.33 | 0.333 | mg/kg wet | 3.333 | | 100 | 40-140 | | | |
| Naphthalene | 2.71 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Phenanthrene | 2.81 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | | | |
| Pyrene | 2.89 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 3.19 | | mg/kg wet | 3.333 | | 96 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.45 | | mg/kg wet | 3.333 | | 104 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 3.07 | | mg/kg wet | 3.333 | | 92 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.98 | | mg/kg wet | 3.333 | | 119 | 30-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|---|----|--|
| 2-Methylnaphthalene | 2.56 | 0.333 | mg/kg wet | 3.333 | | 77 | 40-140 | 6 | 30 | |
| Acenaphthene | 2.55 | 0.333 | mg/kg wet | 3.333 | | 77 | 40-140 | 3 | 30 | |
| Acenaphthylene | 2.60 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | 3 | 30 | |
| Anthracene | 2.66 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 5 | 30 | |
| Benzo(a)anthracene | 2.84 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | 4 | 30 | |
| Benzo(a)pyrene | 2.76 | 0.167 | mg/kg wet | 3.333 | | 83 | 40-140 | 5 | 30 | |
| Benzo(b)fluoranthene | 3.16 | 0.333 | mg/kg wet | 3.333 | | 95 | 40-140 | 4 | 30 | |
| Benzo(g,h,i)perylene | 3.06 | 0.333 | mg/kg wet | 3.333 | | 92 | 40-140 | 5 | 30 | |
| Benzo(k)fluoranthene | 2.65 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 5 | 30 | |
| Chrysene | 2.76 | 0.167 | mg/kg wet | 3.333 | | 83 | 40-140 | 4 | 30 | |
| Dibenzo(a,h)Anthracene | 3.19 | 0.167 | mg/kg wet | 3.333 | | 96 | 40-140 | 5 | 30 | |
| Fluoranthene | 2.96 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | 4 | 30 | |
| Fluorene | 2.64 | 0.333 | mg/kg wet | 3.333 | | 79 | 40-140 | 2 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 3.17 | 0.333 | mg/kg wet | 3.333 | | 95 | 40-140 | 5 | 30 | |
| Naphthalene | 2.53 | 0.333 | mg/kg wet | 3.333 | | 76 | 40-140 | 7 | 30 | |
| Phenanthrene | 2.68 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 5 | 30 | |
| Pyrene | 2.77 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | 4 | 30 | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.87 | | mg/kg wet | 3.333 | | 86 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.13 | | mg/kg wet | 3.333 | | 94 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.73 | | mg/kg wet | 3.333 | | 82 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.63 | | mg/kg wet | 3.333 | | 109 | 30-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Classical Chemistry

Batch CE42823 - TCN Prep

Blank

| | | | | | | | | | | |
|---------------|----|------|-----------|--|--|--|--|--|--|--|
| Total Cyanide | ND | 0.02 | mg/kg wet | | | | | | | |
|---------------|----|------|-----------|--|--|--|--|--|--|--|

LCS

| | | | | | | | | | | |
|---------------|------|------|-----------|--------|--|-----|--------|--|--|--|
| Total Cyanide | 0.11 | 0.02 | mg/kg wet | 0.1003 | | 105 | 90-110 | | | |
|---------------|------|------|-----------|--------|--|-----|--------|--|--|--|

Reference

| | | | | | | | | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|
| Total Cyanide | 109 | 4.93 | mg/kg wet | 101.0 | | 108 | 31-168 | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|

Reference

| | | | | | | | | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|
| Total Cyanide | 110 | 4.92 | mg/kg wet | 101.0 | | 109 | 31-168 | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

Notes and Definitions

- U Analyte included in the analysis, but not detected
- J Reported between MDL and MRL
- D Diluted.
- B Present in Method Blank (B).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405585

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 14050585
Date Project Due: 6/3/14
Days For Project: 5 Day

Items to be checked upon receipt:

- | | | | |
|---|-------------------------------|---|---|
| 1. Air Bill Manifest Present? | <input type="checkbox"/> * No | 10. Are the samples properly preserved? | <input type="checkbox"/> Yes |
| Air No.: | | 11. Proper sample containers used? | <input type="checkbox"/> Yes |
| 2. Were Custody Seals Present? | <input type="checkbox"/> No | 12. Any air bubbles in the VOA vials? | <input type="checkbox"/> N/A |
| 3. Were Custody Seals Intact? | <input type="checkbox"/> N/A | 13. Holding times exceeded? | <input type="checkbox"/> No |
| 4. Is Radiation count < 100 CPM? | <input type="checkbox"/> Yes | 14. Sufficient sample volumes? | <input type="checkbox"/> Yes |
| 5. Is a cooler present? | <input type="checkbox"/> Yes | 15. Any Subcontracting needed? | <input type="checkbox"/> No |
| <input type="text" value="Cooler Temp: 1.0"/> | | 16. Are ESS labels on correct containers? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="text" value="Iced With: Ice"/> | | 17. Were samples received intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Was COC included with samples? | <input type="checkbox"/> Yes | ESS Sample IDs: _____ | |
| 7. Was COC signed and dated by client? | <input type="checkbox"/> Yes | Sub Lab: _____ | |
| 8. Does the COC match the sample | <input type="checkbox"/> Yes | Analysis: _____ | |
| 9. Is COC complete and correct? | <input type="checkbox"/> Yes | TAT: _____ | |

18. Was there need to call project manager to discuss status? If yes, please explain.

Samples off HOLD Re-log 1405539-33, 07, -11, -13

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 8 oz Soil Jar | 1 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 8 oz Soil Jar | 1 | NP |
| 3 | Yes | 40 ml - VOA | 1 | MeOH |
| 3 | Yes | 8 oz Soil Jar | 1 | NP |
| 4 | Yes | 40 ml - VOA | 1 | MeOH |

Completed By: [Signature]
Reviewed By: [Signature]

Date/Time: 5/27/14 1509
Date/Time: 5/27/14 1621

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

1405585
 Page 1 of 2

| | |
|--|--|
| Turn Time <u>Standard</u> Other _____ If faster than 5 days, prior approval by laboratory is required # _____ | Reporting Limits ESS LAB PROJECT ID <u>1405539</u> |
| State where samples were collected from: MA <u>RI</u> CT NH NJ NY ME Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ |
| Is this project for any of the following: MA-MCP Navy USACE Other _____ | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ |

| Co. Name | | Project # | | Project Name (20 Char. or less) | | Write Required Analysis | | | | | | | | | | | | | | | |
|----------------------|---------|------------------|------|---------------------------------|--------|--|-----------|----------------------|--------------------|-----|-----|-------|-----|-----|--|--|--|--|--|--|--|
| GZA GeoEnvironmental | | T-23 33554-03 | | 642 Allen Ave | | | | | | | | | | | | | | | | | |
| Contact Person | | Address | | City | | State | | Zip | | PB# | | | | | | | | | | | |
| Meg Kilpatrick | | 530 Broadway | | Providence | | RI | | 02909 | | | | | | | | | | | | | |
| Telephone # | | Fax # | | Email Address | | | | | | | | | | | | | | | | | |
| 401-421-4140 | | | | MKilpatrick@gza.com | | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | VOC | PAH | PP-13 | TPH | TPH | | | | | | | |
| 1 | 5/22/14 | 8:30 | | | S | 62-303d S-1 | 116 | 2 | 46 | X | X | X | X | X | | | | | | | |
| 2 | | 8:40 | | | | 62-303d S-2 | | | | | | | | | | | | | | | |
| 3 | | 8:50 | | | | 62-303d S-3 | | | | | | | | | | | | | | | |
| 4 | | 9:50 | | | | 62-302 d S-1A | | | | | | | | | | | | | | | |
| 5 | | 10:00 | | | | 62-303d S-15 | | | | | | | | | | | | | | | |
| 6 | | 10:10 | | | | 62-302d S-2 | | | | | | | | | | | | | | | |
| 7 | | 10:20 | | | | 62-302d S-3 | | | | | | | | | | | | | | | |
| 8 | | 13:30 | | | | 62-301d S-1A | | | | | | | | | | | | | | | |
| 9 | | 13:40 | | | | 62-301d S-1B | | | | | | | | | | | | | | | |
| 10 | 5/22/14 | 13:50 | | | | 62-301d S-2 | | | | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | |
|--|--|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Internal Use Only _____ | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No NA: <input type="checkbox"/> Pickup | Sampled by: <u>Mark Beggs / Bill Fortune</u> |
| Cooler Temp: <u>1.0°</u> <input type="checkbox"/> Technicians _____ | Comments: <u>ADD ALL SAMPLES, NEGATIVE</u> |

| | | | | | | | |
|---|-------------------------------|---|-------------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <u>[Signature]</u> | Date/Time <u>5/22/14 1625</u> | Received by: (Signature) <u>[Signature]</u> | Date/Time <u>5/22/14 1625</u> | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

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ESS Laboratory

Division of Thielsch Engineering, Inc.

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www.esslaboratory.com

CHAIN OF CUSTODY

1405585

Page 2 of 2

| | | |
|--|--|--------------------------------------|
| Turn Time <u>Standard</u> Other _____ If faster than 5 days, prior approval by laboratory is required # | Reporting Limits | ESS LAB PROJECT ID 1405539 |
| State where samples were collected from: MA <input checked="" type="checkbox"/> RI <input checked="" type="checkbox"/> CT NH NJ NY ME Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ | 08/27/14 |
| Is this project for any of the following: MA-MCP Navy USACE Other _____ | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF _____ Other _____ | |

| Co. Name | | Project # | | Project Name (20 Char. or less) | | Write Required Analysis | | | | | | | | | | | | | | | | | |
|-----------------------|---------|-----------------|------|---------------------------------|--------|--|-----------|----------------------|--------------------|-----|-----|--------------|-----------------|-----|--|--|--|--|--|--|--|--|--|
| GTA Geo Environmental | | 33554-017-23 | | 642 Allens Ave | | | | | | | | | | | | | | | | | | | |
| Contact Person | | Address | | City | | State | | Zip | | PO# | | | | | | | | | | | | | |
| Meg Kilpatrick | | 530 Broadway | | Providence | | RI | | 02909 | | | | | | | | | | | | | | | |
| Telephone # | | Fax # | | Email Address | | | | | | | | | | | | | | | | | | | |
| 401-421-4140 | | | | mkilpatrick@gtacorp.com | | | | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | VOL | PAH | PP-13 Metals | Total Crude Oil | TPA | | | | | | | | | |
| 3 4 H | 5/22/14 | 0700 | | | S | 68-301d S-3 | 46 | 2 | 40 | X | X | X | X | X | | | | | | | | | |
| K | 0700 | 0700 | | | | TRIPBLANK S22M | 6 | 1 | V | X | | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | |
|--|--|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Internal Use Only | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No NA: <input type="checkbox"/> Pickup | Sampled by: <u>Max Began / Bill Fortune</u> |
| Cooler Temp: <u>1.0°</u> <input type="checkbox"/> Technicians _____ | Comments: <u>HOLD ALL SAMPLES, NO RID Rates</u> |

| | | | | | | | |
|---|-------------------------------|---|-------------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <u>[Signature]</u> | Date/Time <u>5/22/14 1625</u> | Received by: (Signature) <u>[Signature]</u> | Date/Time <u>5/22/14 1625</u> | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt



CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554.00 T-23)
ESS Laboratory Work Order Number: 1405662

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 11:26 am, Jun 06, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

SAMPLE RECEIPT

The following samples were received on May 30, 2014 for the analyses specified on the enclosed Chain of Custody Record.

These samples were originally received on hold on May 23, 2014.

| <u>Lab Number</u> | <u>Sample Name</u> | <u>Matrix</u> | <u>Analysis</u> |
|-------------------|--------------------|---------------|---|
| 1405662-01 | GZ-312D S-2 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405662-02 | GZ-318D S-3 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405662-03 | GZ-317D S-2 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405662-04 | Trip Blank-52314 | Soil | 8260B |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

- 1405662-01 [Present in Method Blank \(B\).](#)
Chloroform
- 1405662-02 [Present in Method Blank \(B\).](#)
Chloroform
- 1405662-03 [Present in Method Blank \(B\).](#)
Chloroform
- 1405662-03 [Surrogate recovery\(ies\) outside of criteria due to matrix \(UCM/coelution/matrix is present\) \(SM\).](#)
Dibromofluoromethane (134% @ 70-130%), Toluene-d8 (132% @ 70-130%)
- 1405662-04 [Present in Method Blank \(B\).](#)
Chloroform

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-312D S-2
Date Sampled: 05/23/14 09:00
Percent Solids: 84

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.8) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |
| Arsenic | 4.9 (2.4) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |
| Beryllium | 0.28 (0.10) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |
| Cadmium | ND (0.48) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |
| Chromium | 3.3 (1.0) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |
| Copper | 16.6 (2.4) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |
| Lead | 16.6 (4.8) | | 6010B | | 1 | SVD | 05/31/14 3:12 | 2.47 | 100 | CE42907 |
| Mercury | ND (0.037) | | 7471A | | 1 | KJK | 05/30/14 19:04 | 0.64 | 40 | CE43009 |
| Nickel | 8.2 (2.4) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |
| Selenium | ND (4.8) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |
| Silver | ND (0.48) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |
| Thallium | ND (1.19) | | 7841 | | 5 | KJK | 06/04/14 19:43 | 2.47 | 100 | CE42907 |
| Zinc | 21.8 (2.4) | | 6010B | | 1 | ICP | 05/31/14 22:02 | 2.47 | 100 | CE42907 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-312D S-2
Date Sampled: 05/23/14 09:00
Percent Solids: 84
Initial Volume: 19
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.113) | 0.0098 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,1,1-Trichloroethane | ND (0.0564) | 0.0099 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,1,2,2-Tetrachloroethane | ND (0.0564) | 0.0153 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,1,2-Trichloroethane | ND (0.0564) | 0.0141 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,1-Dichloroethane | ND (0.0564) | 0.0090 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,1-Dichloroethene | ND (0.0564) | 0.0139 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,1-Dichloropropene | ND (0.0564) | 0.0087 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,2,3-Trichlorobenzene | ND (0.0564) | 0.0188 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,2,3-Trichloropropane | ND (0.0564) | 0.0140 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,2,4-Trichlorobenzene | ND (0.0564) | 0.0124 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,2,4-Trimethylbenzene | ND (0.0564) | 0.0108 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,2-Dibromo-3-Chloropropane | ND (0.338) | 0.113 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,2-Dibromoethane | ND (0.0564) | 0.0143 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,2-Dichlorobenzene | ND (0.0564) | 0.0080 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,2-Dichloroethane | ND (0.0564) | 0.0151 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,2-Dichloropropane | ND (0.0564) | 0.0148 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,3,5-Trimethylbenzene | ND (0.0564) | 0.0099 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,3-Dichlorobenzene | ND (0.0564) | 0.0071 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,3-Dichloropropane | ND (0.0564) | 0.0126 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,4-Dichlorobenzene | ND (0.0564) | 0.0150 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1,4-Dioxane - Screen | ND (5.64) | 1.88 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 1-Chlorohexane | ND (0.0564) | 0.0107 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 2,2-Dichloropropane | ND (0.113) | 0.0193 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 2-Butanone | ND (1.41) | 0.326 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 2-Chlorotoluene | ND (0.0564) | 0.0159 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 2-Hexanone | ND (0.564) | 0.0971 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 4-Chlorotoluene | ND (0.0564) | 0.0073 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 4-Isopropyltoluene | ND (0.0564) | 0.0100 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| 4-Methyl-2-Pentanone | ND (0.564) | 0.0679 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Acetone | ND (1.41) | 0.417 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Benzene | ND (0.0564) | 0.0091 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Bromobenzene | ND (0.0564) | 0.0154 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-312D S-2
Date Sampled: 05/23/14 09:00
Percent Solids: 84
Initial Volume: 19
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0564) | 0.0183 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Bromodichloromethane | ND (0.0564) | 0.0078 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Bromoform | ND (0.0564) | 0.0162 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Bromomethane | ND (0.113) | 0.0377 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Carbon Disulfide | ND (0.0564) | 0.0083 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Carbon Tetrachloride | ND (0.0564) | 0.0098 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Chlorobenzene | ND (0.0564) | 0.0089 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Chloroethane | ND (0.113) | 0.0375 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Chloroform | B, J 0.0169 (0.0564) | 0.0116 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Chloromethane | ND (0.113) | 0.0143 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| cis-1,2-Dichloroethene | ND (0.0564) | 0.0140 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| cis-1,3-Dichloropropene | ND (0.0564) | 0.0127 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Dibromochloromethane | ND (0.0564) | 0.0142 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Dibromomethane | ND (0.0564) | 0.0178 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Dichlorodifluoromethane | ND (0.0564) | 0.0098 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Diethyl Ether | ND (0.0564) | 0.0143 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Di-isopropyl ether | ND (0.0564) | 0.0106 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Ethyl tertiary-butyl ether | ND (0.0564) | 0.0142 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Ethylbenzene | ND (0.0564) | 0.0073 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Hexachlorobutadiene | ND (0.0564) | 0.0188 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Isopropylbenzene | ND (0.0564) | 0.0099 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Methyl tert-Butyl Ether | ND (0.0564) | 0.0090 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Methylene Chloride | ND (0.282) | 0.0148 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Naphthalene | ND (0.0564) | 0.0148 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| n-Butylbenzene | ND (0.0564) | 0.0139 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| n-Propylbenzene | ND (0.0564) | 0.0138 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| sec-Butylbenzene | ND (0.0564) | 0.0076 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Styrene | ND (0.0564) | 0.0074 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| tert-Butylbenzene | ND (0.0564) | 0.0132 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Tertiary-amyl methyl ether | ND (0.0564) | 0.0081 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Tetrachloroethene | ND (0.0564) | 0.0188 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Tetrahydrofuran | ND (0.564) | 0.145 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-312D S-2
Date Sampled: 05/23/14 09:00
Percent Solids: 84
Initial Volume: 19
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0564) | 0.0143 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| trans-1,2-Dichloroethene | ND (0.0564) | 0.0185 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| trans-1,3-Dichloropropene | ND (0.0564) | 0.0174 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Trichloroethene | ND (0.0564) | 0.0116 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Trichlorofluoromethane | ND (0.0564) | 0.0149 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Vinyl Acetate | ND (0.282) | 0.0116 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Vinyl Chloride | ND (0.0564) | 0.0186 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Xylene O | ND (0.0564) | 0.0108 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Xylene P,M | ND (0.113) | 0.0219 | 8260B | | 1 | 06/02/14 13:10 | CXF0011 | CF40243 |
| Xylenes (Total) | ND (0.113) | | 8260B | | 1 | 06/02/14 13:10 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>94 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>97 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>99 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>99 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-312D S-2
Date Sampled: 05/23/14 09:00
Percent Solids: 84
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/30/14 11:40

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 83.9 (46.0) | | 8100M | | 1 | 05/31/14 0:09 | CXE0421 | CE42904 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>94 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-312D S-2
Date Sampled: 05/23/14 09:00
Percent Solids: 84
Initial Volume: 14.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/30/14 12:49

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Acenaphthene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Acenaphthylene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Anthracene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Benzo(a)anthracene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Benzo(a)pyrene | ND (0.205) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Benzo(b)fluoranthene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Benzo(g,h,i)perylene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Benzo(k)fluoranthene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Chrysene | ND (0.205) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Dibenzo(a,h)Anthracene | ND (0.205) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Fluoranthene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Fluorene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Indeno(1,2,3-cd)Pyrene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Naphthalene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Phenanthrene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |
| Pyrene | ND (0.410) | | 8270C | | 1 | 06/02/14 17:11 | CXF0001 | CE43005 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 81 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 90 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 75 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 82 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-312D S-2
Date Sampled: 05/23/14 09:00
Percent Solids: 84

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-01
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.10) | | 9014 | | 1 | JLK | 05/31/14 9:42 | mg/kg dry | CE43102 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-318D S-3
Date Sampled: 05/23/14 12:45
Percent Solids: 86

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | 5.1 (4.6) | | 6010B | | 1 | ICP | 05/31/14 22:06 | 2.5 | 100 | CE42907 |
| Arsenic | 6.4 (2.3) | | 6010B | | 1 | ICP | 05/31/14 22:06 | 2.5 | 100 | CE42907 |
| Beryllium | 0.37 (0.10) | | 6010B | | 1 | ICP | 05/31/14 22:06 | 2.5 | 100 | CE42907 |
| Cadmium | ND (0.47) | | 6010B | | 1 | ICP | 05/31/14 22:06 | 2.5 | 100 | CE42907 |
| Chromium | 8.3 (0.9) | | 6010B | | 1 | ICP | 05/31/14 22:06 | 2.5 | 100 | CE42907 |
| Copper | 12.0 (2.3) | | 6010B | | 1 | ICP | 05/31/14 22:06 | 2.5 | 100 | CE42907 |
| Lead | 5.9 (4.6) | | 6010B | | 1 | SVD | 05/31/14 3:16 | 2.5 | 100 | CE42907 |
| Mercury | ND (0.035) | | 7471A | | 1 | KJK | 05/30/14 19:07 | 0.66 | 40 | CE43009 |
| Nickel | 10.1 (2.3) | | 6010B | | 1 | ICP | 05/31/14 22:06 | 2.5 | 100 | CE42907 |
| Selenium | ND (9.3) | | 6010B | | 2 | ICP | 06/04/14 18:25 | 2.5 | 100 | CE42907 |
| Silver | ND (0.47) | | 6010B | | 1 | ICP | 05/31/14 22:06 | 2.5 | 100 | CE42907 |
| Thallium | ND (1.15) | | 7841 | | 5 | KJK | 06/04/14 19:49 | 2.5 | 100 | CE42907 |
| Zinc | 24.9 (2.3) | | 6010B | | 1 | ICP | 05/31/14 22:06 | 2.5 | 100 | CE42907 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-318D S-3
Date Sampled: 05/23/14 12:45
Percent Solids: 86
Initial Volume: 24.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0870) | 0.0076 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,1,1-Trichloroethane | ND (0.0435) | 0.0077 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,1,2,2-Tetrachloroethane | ND (0.0435) | 0.0118 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,1,2-Trichloroethane | ND (0.0435) | 0.0109 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,1-Dichloroethane | ND (0.0435) | 0.0070 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,1-Dichloroethene | ND (0.0435) | 0.0107 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,1-Dichloropropene | ND (0.0435) | 0.0067 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,2,3-Trichlorobenzene | ND (0.0435) | 0.0145 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,2,3-Trichloropropane | ND (0.0435) | 0.0108 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,2,4-Trichlorobenzene | ND (0.0435) | 0.0096 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,2,4-Trimethylbenzene | J 0.0209 (0.0435) | 0.0083 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,2-Dibromo-3-Chloropropane | ND (0.261) | 0.0870 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,2-Dibromoethane | ND (0.0435) | 0.0110 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,2-Dichlorobenzene | ND (0.0435) | 0.0062 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,2-Dichloroethane | ND (0.0435) | 0.0117 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,2-Dichloropropane | ND (0.0435) | 0.0114 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,3,5-Trimethylbenzene | ND (0.0435) | 0.0077 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,3-Dichlorobenzene | ND (0.0435) | 0.0055 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,3-Dichloropropane | ND (0.0435) | 0.0097 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,4-Dichlorobenzene | ND (0.0435) | 0.0116 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1,4-Dioxane - Screen | ND (4.35) | 1.45 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 1-Chlorohexane | ND (0.0435) | 0.0083 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 2,2-Dichloropropane | ND (0.0870) | 0.0149 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 2-Butanone | ND (1.09) | 0.251 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 2-Chlorotoluene | ND (0.0435) | 0.0123 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 2-Hexanone | ND (0.435) | 0.0749 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 4-Chlorotoluene | ND (0.0435) | 0.0057 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 4-Isopropyltoluene | ND (0.0435) | 0.0077 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| 4-Methyl-2-Pentanone | ND (0.435) | 0.0523 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Acetone | ND (1.09) | 0.322 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Benzene | ND (0.0435) | 0.0070 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Bromobenzene | ND (0.0435) | 0.0119 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-318D S-3
Date Sampled: 05/23/14 12:45
Percent Solids: 86
Initial Volume: 24.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0435) | 0.0141 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Bromodichloromethane | ND (0.0435) | 0.0060 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Bromoform | ND (0.0435) | 0.0125 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Bromomethane | ND (0.0870) | 0.0290 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Carbon Disulfide | ND (0.0435) | 0.0064 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Carbon Tetrachloride | ND (0.0435) | 0.0076 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Chlorobenzene | ND (0.0435) | 0.0069 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Chloroethane | ND (0.0870) | 0.0290 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Chloroform | B, J 0.0157 (0.0435) | 0.0090 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Chloromethane | ND (0.0870) | 0.0110 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| cis-1,2-Dichloroethene | ND (0.0435) | 0.0108 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| cis-1,3-Dichloropropene | ND (0.0435) | 0.0098 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Dibromochloromethane | ND (0.0435) | 0.0110 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Dibromomethane | ND (0.0435) | 0.0137 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Dichlorodifluoromethane | ND (0.0435) | 0.0076 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Diethyl Ether | ND (0.0435) | 0.0110 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Di-isopropyl ether | ND (0.0435) | 0.0082 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Ethyl tertiary-butyl ether | ND (0.0435) | 0.0110 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Ethylbenzene | ND (0.0435) | 0.0057 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Hexachlorobutadiene | ND (0.0435) | 0.0145 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Isopropylbenzene | ND (0.0435) | 0.0077 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Methyl tert-Butyl Ether | ND (0.0435) | 0.0070 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Methylene Chloride | ND (0.217) | 0.0114 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Naphthalene | 0.0739 (0.0435) | 0.0114 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| n-Butylbenzene | ND (0.0435) | 0.0107 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| n-Propylbenzene | ND (0.0435) | 0.0106 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| sec-Butylbenzene | ND (0.0435) | 0.0058 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Styrene | J 0.0096 (0.0435) | 0.0057 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| tert-Butylbenzene | ND (0.0435) | 0.0102 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Tertiary-amyl methyl ether | ND (0.0435) | 0.0063 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Tetrachloroethene | ND (0.0435) | 0.0145 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Tetrahydrofuran | ND (0.435) | 0.112 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-318D S-3
Date Sampled: 05/23/14 12:45
Percent Solids: 86
Initial Volume: 24.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0435) | 0.0110 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| trans-1,2-Dichloroethene | ND (0.0435) | 0.0143 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| trans-1,3-Dichloropropene | ND (0.0435) | 0.0134 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Trichloroethene | ND (0.0435) | 0.0090 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Trichlorofluoromethane | ND (0.0435) | 0.0115 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Vinyl Acetate | ND (0.217) | 0.0090 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Vinyl Chloride | ND (0.0435) | 0.0143 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Xylene O | ND (0.0435) | 0.0083 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Xylene P,M | ND (0.0870) | 0.0169 | 8260B | | 1 | 06/02/14 13:38 | CXF0011 | CF40243 |
| Xylenes (Total) | ND (0.0870) | | 8260B | | 1 | 06/02/14 13:38 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>110 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>116 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>117 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>118 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-318D S-3
Date Sampled: 05/23/14 12:45
Percent Solids: 86
Initial Volume: 19.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/30/14 11:40

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | ND (44.5) | | 8100M | | 1 | 05/31/14 0:48 | CXE0421 | CE42904 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>90 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-318D S-3
Date Sampled: 05/23/14 12:45
Percent Solids: 86
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/30/14 12:49

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Acenaphthene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Acenaphthylene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Anthracene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Benzo(a)anthracene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Benzo(a)pyrene | ND (0.188) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Benzo(b)fluoranthene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Benzo(g,h,i)perylene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Benzo(k)fluoranthene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Chrysene | ND (0.188) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Dibenzo(a,h)Anthracene | ND (0.188) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Fluoranthene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Fluorene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Indeno(1,2,3-cd)Pyrene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Naphthalene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Phenanthrene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |
| Pyrene | ND (0.376) | | 8270C | | 1 | 06/02/14 17:45 | CXF0001 | CE43005 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 85 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 92 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 77 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 88 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-318D S-3
Date Sampled: 05/23/14 12:45
Percent Solids: 86

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-02
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.10) | | 9014 | | 1 | JLK | 05/31/14 9:42 | mg/kg dry | CE43102 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-317D S-2
Date Sampled: 05/23/14 13:45
Percent Solids: 81

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (5.2) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |
| Arsenic | 6.1 (2.6) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |
| Beryllium | 0.33 (0.11) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |
| Cadmium | ND (0.52) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |
| Chromium | 8.3 (1.0) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |
| Copper | 33.6 (2.6) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |
| Lead | 77.0 (5.2) | | 6010B | | 1 | SVD | 05/31/14 3:20 | 2.4 | 100 | CE42907 |
| Mercury | 0.821 (0.076) | | 7471A | | 2 | KJK | 05/30/14 19:27 | 0.65 | 40 | CE43009 |
| Nickel | 9.0 (2.6) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |
| Selenium | ND (5.2) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |
| Silver | ND (0.52) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |
| Thallium | ND (1.28) | | 7841 | | 5 | KJK | 06/04/14 20:07 | 2.4 | 100 | CE42907 |
| Zinc | 143 (2.6) | | 6010B | | 1 | ICP | 05/31/14 22:10 | 2.4 | 100 | CE42907 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-317D S-2
Date Sampled: 05/23/14 13:45
Percent Solids: 81
Initial Volume: 35.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0773) | 0.0067 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,1,1-Trichloroethane | ND (0.0386) | 0.0068 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,1,2,2-Tetrachloroethane | ND (0.0386) | 0.0105 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,1,2-Trichloroethane | ND (0.0386) | 0.0097 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,1-Dichloroethane | ND (0.0386) | 0.0062 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,1-Dichloroethene | ND (0.0386) | 0.0095 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,1-Dichloropropene | ND (0.0386) | 0.0059 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,2,3-Trichlorobenzene | ND (0.0386) | 0.0129 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,2,3-Trichloropropane | ND (0.0386) | 0.0096 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,2,4-Trichlorobenzene | ND (0.0386) | 0.0085 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,2,4-Trimethylbenzene | 0.291 (0.0386) | 0.0074 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,2-Dibromo-3-Chloropropane | ND (0.232) | 0.0773 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,2-Dibromoethane | ND (0.0386) | 0.0098 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,2-Dichlorobenzene | ND (0.0386) | 0.0055 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,2-Dichloroethane | ND (0.0386) | 0.0104 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,2-Dichloropropane | ND (0.0386) | 0.0101 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,3,5-Trimethylbenzene | 0.0989 (0.0386) | 0.0068 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,3-Dichlorobenzene | ND (0.0386) | 0.0049 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,3-Dichloropropane | ND (0.0386) | 0.0087 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,4-Dichlorobenzene | ND (0.0386) | 0.0103 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1,4-Dioxane - Screen | ND (3.86) | 1.29 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 1-Chlorohexane | ND (0.0386) | 0.0073 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 2,2-Dichloropropane | ND (0.0773) | 0.0132 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 2-Butanone | ND (0.966) | 0.223 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 2-Chlorotoluene | ND (0.0386) | 0.0109 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 2-Hexanone | ND (0.386) | 0.0665 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 4-Chlorotoluene | ND (0.0386) | 0.0050 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 4-Isopropyltoluene | ND (0.0386) | 0.0069 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| 4-Methyl-2-Pentanone | ND (0.386) | 0.0465 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Acetone | ND (0.966) | 0.286 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Benzene | 0.234 (0.0386) | 0.0063 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Bromobenzene | ND (0.0386) | 0.0106 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-317D S-2
Date Sampled: 05/23/14 13:45
Percent Solids: 81
Initial Volume: 35.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0386) | 0.0125 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Bromodichloromethane | ND (0.0386) | 0.0053 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Bromoform | ND (0.0386) | 0.0111 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Bromomethane | ND (0.0773) | 0.0258 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Carbon Disulfide | ND (0.0386) | 0.0057 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Carbon Tetrachloride | ND (0.0386) | 0.0067 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Chlorobenzene | ND (0.0386) | 0.0061 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Chloroethane | ND (0.0773) | 0.0257 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Chloroform | B, J 0.0116 (0.0386) | 0.0080 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Chloromethane | ND (0.0773) | 0.0098 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| cis-1,2-Dichloroethene | ND (0.0386) | 0.0096 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| cis-1,3-Dichloropropene | ND (0.0386) | 0.0087 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Dibromochloromethane | ND (0.0386) | 0.0097 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Dibromomethane | ND (0.0386) | 0.0122 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Dichlorodifluoromethane | ND (0.0386) | 0.0067 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Diethyl Ether | ND (0.0386) | 0.0098 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Di-isopropyl ether | ND (0.0386) | 0.0073 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Ethyl tertiary-butyl ether | ND (0.0386) | 0.0097 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Ethylbenzene | 0.0587 (0.0386) | 0.0050 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Hexachlorobutadiene | ND (0.0386) | 0.0129 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Isopropylbenzene | ND (0.0386) | 0.0068 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Methyl tert-Butyl Ether | ND (0.0386) | 0.0062 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Methylene Chloride | ND (0.193) | 0.0101 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Naphthalene | 10.1 (0.386) | 0.101 | 8260B | | 10 | 06/03/14 16:56 | CXF0011 | CF40243 |
| n-Butylbenzene | J 0.0193 (0.0386) | 0.0095 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| n-Propylbenzene | ND (0.0386) | 0.0094 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| sec-Butylbenzene | ND (0.0386) | 0.0052 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Styrene | ND (0.0386) | 0.0051 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| tert-Butylbenzene | ND (0.0386) | 0.0090 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Tertiary-amyl methyl ether | ND (0.0386) | 0.0056 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Tetrachloroethene | ND (0.0386) | 0.0129 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Tetrahydrofuran | ND (0.386) | 0.0997 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-317D S-2
 Date Sampled: 05/23/14 13:45
 Percent Solids: 81
 Initial Volume: 35.1
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405662
 ESS Laboratory Sample ID: 1405662-03
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|-----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.188 (0.0386) | 0.0098 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| trans-1,2-Dichloroethene | ND (0.0386) | 0.0127 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| trans-1,3-Dichloropropene | ND (0.0386) | 0.0119 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Trichloroethene | ND (0.0386) | 0.0080 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Trichlorofluoromethane | ND (0.0386) | 0.0102 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Vinyl Acetate | ND (0.193) | 0.0080 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Vinyl Chloride | ND (0.0386) | 0.0127 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Xylene O | 0.127 (0.0386) | 0.0074 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Xylene P,M | 0.310 (0.0773) | 0.0150 | 8260B | | 1 | 06/02/14 14:26 | CXF0011 | CF40243 |
| Xylenes (Total) | 0.437 (0.0773) | | 8260B | | 1 | 06/02/14 14:26 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 126 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 127 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 134 % | SM | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 132 % | SM | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-317D S-2
Date Sampled: 05/23/14 13:45
Percent Solids: 81
Initial Volume: 19.7
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/30/14 11:40

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 1410 (94.6) | | 8100M | | 2 | 05/31/14 1:27 | CXE0421 | CE42904 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 91 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-317D S-2
Date Sampled: 05/23/14 13:45
Percent Solids: 81
Initial Volume: 14.3
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/30/14 12:49

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Acenaphthene | ND (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Acenaphthylene | 4.66 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Anthracene | ND (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Benzo(a)anthracene | 11.8 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Benzo(a)pyrene | 14.9 (1.09) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Benzo(b)fluoranthene | 19.9 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Benzo(g,h,i)perylene | 12.3 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Benzo(k)fluoranthene | 8.99 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Chrysene | 12.5 (1.09) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Dibenzo(a,h)Anthracene | 3.42 (1.09) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Fluoranthene | 16.3 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Fluorene | ND (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Indeno(1,2,3-cd)Pyrene | 10.2 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Naphthalene | 8.57 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Phenanthrene | 4.62 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |
| Pyrene | 12.9 (2.17) | | 8270C | | 5 | 06/02/14 13:44 | CXF0001 | CE43005 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 61 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 73 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 58 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 81 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-317D S-2
Date Sampled: 05/23/14 13:45
Percent Solids: 81

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-03
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.13) | | 9014 | | 1 | JLK | 05/31/14 9:42 | mg/kg dry | CE43102 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank-52314
Date Sampled: 05/23/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-04
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.100) | 0.0087 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,1,1-Trichloroethane | ND (0.0500) | 0.0088 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,1,2,2-Tetrachloroethane | ND (0.0500) | 0.0136 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,1,2-Trichloroethane | ND (0.0500) | 0.0125 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,1-Dichloroethane | ND (0.0500) | 0.0080 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,1-Dichloroethene | ND (0.0500) | 0.0123 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,1-Dichloropropene | ND (0.0500) | 0.0077 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,2,3-Trichlorobenzene | ND (0.0500) | 0.0167 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,2,3-Trichloropropane | ND (0.0500) | 0.0124 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,2,4-Trichlorobenzene | ND (0.0500) | 0.0110 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,2,4-Trimethylbenzene | ND (0.0500) | 0.0096 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,2-Dibromo-3-Chloropropane | ND (0.300) | 0.100 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,2-Dibromoethane | ND (0.0500) | 0.0127 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,2-Dichlorobenzene | ND (0.0500) | 0.0071 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,2-Dichloroethane | ND (0.0500) | 0.0134 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,2-Dichloropropane | ND (0.0500) | 0.0131 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,3,5-Trimethylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,3-Dichlorobenzene | ND (0.0500) | 0.0063 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,3-Dichloropropane | ND (0.0500) | 0.0112 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,4-Dichlorobenzene | ND (0.0500) | 0.0133 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1,4-Dioxane - Screen | ND (5.00) | 1.67 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 1-Chlorohexane | ND (0.0500) | 0.0095 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 2,2-Dichloropropane | ND (0.100) | 0.0171 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 2-Butanone | ND (1.25) | 0.289 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 2-Chlorotoluene | ND (0.0500) | 0.0141 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 2-Hexanone | ND (0.500) | 0.0861 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 4-Chlorotoluene | ND (0.0500) | 0.0065 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 4-Isopropyltoluene | ND (0.0500) | 0.0089 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| 4-Methyl-2-Pentanone | ND (0.500) | 0.0602 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Acetone | ND (1.25) | 0.370 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Benzene | ND (0.0500) | 0.0081 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Bromobenzene | ND (0.0500) | 0.0137 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank-52314
Date Sampled: 05/23/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-04
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0500) | 0.0162 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Bromodichloromethane | ND (0.0500) | 0.0069 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Bromoform | ND (0.0500) | 0.0144 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Bromomethane | ND (0.100) | 0.0334 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Carbon Disulfide | ND (0.0500) | 0.0074 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Carbon Tetrachloride | ND (0.0500) | 0.0087 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Chlorobenzene | ND (0.0500) | 0.0079 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Chloroethane | ND (0.100) | 0.0333 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Chloroform | B, J 0.0150 (0.0500) | 0.0103 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Chloromethane | ND (0.100) | 0.0127 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| cis-1,2-Dichloroethene | ND (0.0500) | 0.0124 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| cis-1,3-Dichloropropene | ND (0.0500) | 0.0113 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Dibromochloromethane | ND (0.0500) | 0.0126 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Dibromomethane | ND (0.0500) | 0.0158 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Dichlorodifluoromethane | ND (0.0500) | 0.0087 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Diethyl Ether | ND (0.0500) | 0.0127 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Di-isopropyl ether | ND (0.0500) | 0.0094 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Ethyl tertiary-butyl ether | ND (0.0500) | 0.0126 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Ethylbenzene | ND (0.0500) | 0.0065 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Hexachlorobutadiene | ND (0.0500) | 0.0167 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Isopropylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Methyl tert-Butyl Ether | ND (0.0500) | 0.0080 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Methylene Chloride | ND (0.250) | 0.0131 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Naphthalene | ND (0.0500) | 0.0131 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| n-Butylbenzene | ND (0.0500) | 0.0123 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| n-Propylbenzene | ND (0.0500) | 0.0122 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| sec-Butylbenzene | ND (0.0500) | 0.0067 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Styrene | ND (0.0500) | 0.0066 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| tert-Butylbenzene | ND (0.0500) | 0.0117 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Tertiary-amyl methyl ether | ND (0.0500) | 0.0072 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Tetrachloroethene | ND (0.0500) | 0.0167 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Tetrahydrofuran | ND (0.500) | 0.129 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank-52314
Date Sampled: 05/23/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405662
ESS Laboratory Sample ID: 1405662-04
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0500) | 0.0127 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| trans-1,2-Dichloroethene | ND (0.0500) | 0.0164 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| trans-1,3-Dichloropropene | ND (0.0500) | 0.0154 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Trichloroethene | ND (0.0500) | 0.0103 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Trichlorofluoromethane | ND (0.0500) | 0.0132 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Vinyl Acetate | ND (0.250) | 0.0103 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Vinyl Chloride | ND (0.0500) | 0.0165 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Xylene O | ND (0.0500) | 0.0096 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Xylene P,M | ND (0.100) | 0.0194 | 8260B | | 1 | 06/02/14 12:13 | CXF0011 | CF40243 |
| Xylenes (Total) | ND (0.100) | | 8260B | | 1 | 06/02/14 12:13 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>90 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>94 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>96 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>95 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE42907 - 3050B

Blank

| | | | |
|-----------|----|------|-----------|
| Antimony | ND | 5.0 | mg/kg wet |
| Arsenic | ND | 2.5 | mg/kg wet |
| Beryllium | ND | 0.10 | mg/kg wet |
| Cadmium | ND | 0.50 | mg/kg wet |
| Chromium | ND | 1.0 | mg/kg wet |
| Copper | ND | 2.5 | mg/kg wet |
| Lead | ND | 5.0 | mg/kg wet |
| Nickel | ND | 2.5 | mg/kg wet |
| Selenium | ND | 5.0 | mg/kg wet |
| Silver | ND | 0.50 | mg/kg wet |
| Thallium | ND | 0.25 | mg/kg wet |
| Zinc | ND | 2.5 | mg/kg wet |

LCS

| | | | | | | |
|-----------|------|------|-----------|-------|----|--------|
| Antimony | 108 | 15.6 | mg/kg wet | 116.0 | 93 | 80-120 |
| Arsenic | 104 | 7.8 | mg/kg wet | 122.0 | 85 | 80-120 |
| Beryllium | 46.9 | 0.33 | mg/kg wet | 54.30 | 86 | 80-120 |
| Cadmium | 74.2 | 1.57 | mg/kg wet | 88.00 | 84 | 80-120 |
| Chromium | 85.6 | 3.1 | mg/kg wet | 102.0 | 84 | 80-120 |
| Copper | 65.8 | 7.8 | mg/kg wet | 78.00 | 84 | 80-120 |
| Lead | 78.4 | 15.6 | mg/kg wet | 94.50 | 83 | 80-120 |
| Nickel | 48.7 | 7.8 | mg/kg wet | 56.30 | 87 | 80-120 |
| Selenium | 128 | 15.6 | mg/kg wet | 157.0 | 82 | 80-120 |
| Silver | 29.2 | 1.57 | mg/kg wet | 34.20 | 85 | 80-120 |
| Thallium | 105 | 38.7 | mg/kg wet | 116.0 | 91 | 80-120 |
| Zinc | 167 | 7.8 | mg/kg wet | 207.0 | 81 | 80-120 |

LCS Dup

| | | | | | | | | |
|-----------|------|------|-----------|-------|----|--------|-----|----|
| Antimony | 105 | 16.1 | mg/kg wet | 116.0 | 90 | 80-120 | 3 | 20 |
| Arsenic | 102 | 8.1 | mg/kg wet | 122.0 | 83 | 80-120 | 2 | 20 |
| Beryllium | 45.9 | 0.34 | mg/kg wet | 54.30 | 84 | 80-120 | 2 | 20 |
| Cadmium | 71.3 | 1.62 | mg/kg wet | 88.00 | 81 | 80-120 | 4 | 20 |
| Chromium | 84.3 | 3.2 | mg/kg wet | 102.0 | 83 | 80-120 | 2 | 20 |
| Copper | 65.3 | 8.1 | mg/kg wet | 78.00 | 84 | 80-120 | 0.7 | 20 |
| Lead | 78.2 | 16.1 | mg/kg wet | 94.50 | 83 | 80-120 | 0.3 | 20 |
| Nickel | 47.6 | 8.1 | mg/kg wet | 56.30 | 85 | 80-120 | 2 | 20 |
| Selenium | 125 | 16.1 | mg/kg wet | 157.0 | 80 | 80-120 | 2 | 20 |
| Silver | 28.7 | 1.62 | mg/kg wet | 34.20 | 84 | 80-120 | 2 | 20 |
| Thallium | 108 | 39.9 | mg/kg wet | 116.0 | 93 | 80-120 | 3 | 20 |
| Zinc | 165 | 8.1 | mg/kg wet | 207.0 | 80 | 80-120 | 1 | 20 |

Batch CE43009 - 7471A

Blank

| | | | |
|---------|----|-------|-----------|
| Mercury | ND | 0.033 | mg/kg wet |
|---------|----|-------|-----------|

LCS

| | | | | | | |
|---------|------|------|-----------|-------|----|--------|
| Mercury | 3.82 | 1.62 | mg/kg wet | 4.306 | 89 | 80-120 |
|---------|------|------|-----------|-------|----|--------|



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CE43009 - 7471A

LCS Dup

| | | | | | | | | | | |
|---------|------|------|-----------|-------|--|----|--------|---|----|--|
| Mercury | 4.07 | 1.52 | mg/kg wet | 4.164 | | 98 | 80-120 | 6 | 20 | |
|---------|------|------|-----------|-------|--|----|--------|---|----|--|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

Blank

| | | | |
|-----------------------------|----|--------|-----------|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet |
| 2-Butanone | ND | 1.25 | mg/kg wet |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet |
| 2-Hexanone | ND | 0.500 | mg/kg wet |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet |
| Acetone | ND | 1.25 | mg/kg wet |
| Benzene | ND | 0.0500 | mg/kg wet |
| Bromobenzene | ND | 0.0500 | mg/kg wet |
| Bromochloromethane | ND | 0.0500 | mg/kg wet |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet |
| Bromoform | ND | 0.0500 | mg/kg wet |
| Bromomethane | ND | 0.100 | mg/kg wet |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet |
| Chlorobenzene | ND | 0.0500 | mg/kg wet |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|-----|--------|--|--|---|
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0140 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.39 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.40 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.49 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.44 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |

LCS

| | | | | | | | | | | |
|---------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.45 | 0.100 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,1-Dichloroethane | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 1,1-Dichloroethene | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 1,1-Dichloropropene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,2,3-Trichlorobenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.36 | 0.300 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 1,2-Dibromoethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,2-Dichloroethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2-Dichloropropane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,3-Dichloropropane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,4-Dioxane - Screen | 55.9 | 5.00 | mg/kg wet | 50.00 | | 112 | 44-241 | | | |
| 1-Chlorohexane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 2,2-Dichloropropane | 2.52 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 2-Butanone | 11.5 | 1.25 | mg/kg wet | 12.50 | | 92 | 70-130 | | | |
| 2-Chlorotoluene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 2-Hexanone | 11.5 | 0.500 | mg/kg wet | 12.50 | | 92 | 70-130 | | | |
| 4-Chlorotoluene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 4-Isopropyltoluene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.1 | 0.500 | mg/kg wet | 12.50 | | 97 | 70-130 | | | |
| Acetone | 12.1 | 1.25 | mg/kg wet | 12.50 | | 96 | 70-130 | | | |
| Benzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Bromobenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromochloromethane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Bromodichloromethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromoform | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Bromomethane | 2.58 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Carbon Disulfide | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Carbon Tetrachloride | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Chlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Chloroethane | 2.20 | 0.100 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Chloroform | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Chloromethane | 2.26 | 0.100 | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Dibromochloromethane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Dibromomethane | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Dichlorodifluoromethane | 2.08 | 0.0500 | mg/kg wet | 2.500 | | 83 | 70-130 | | | |
| Diethyl Ether | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Di-isopropyl ether | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Ethylbenzene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Hexachlorobutadiene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Isopropylbenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Methylene Chloride | 2.44 | 0.250 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Naphthalene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| n-Butylbenzene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| n-Propylbenzene | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| sec-Butylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Styrene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| tert-Butylbenzene | 2.86 | 0.0500 | mg/kg wet | 2.500 | | 114 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Tetrachloroethene | 1.80 | 0.0500 | mg/kg wet | 2.500 | | 72 | 70-130 | | | |
| Tetrahydrofuran | 2.43 | 0.500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Toluene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Trichloroethene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Vinyl Acetate | 2.68 | 0.250 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Vinyl Chloride | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Xylene O | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Xylene P,M | 5.08 | 0.100 | mg/kg wet | 5.000 | | 102 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.39 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.38 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.36 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.45 | | mg/kg wet | 2.500 | | 98 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| 1,1,1,2-Tetrachloroethane | 2.52 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | 3 | 25 | |
| 1,1,1-Trichloroethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 2 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| 1,1,2-Trichloroethane | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.7 | 25 | |
| 1,1-Dichloroethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| 1,1-Dichloroethene | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 1 | 25 | |
| 1,1-Dichloropropene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 2 | 25 | |
| 1,2,3-Trichlorobenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 3 | 25 | |
| 1,2,3-Trichloropropane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 9 | 25 | |
| 1,2,4-Trichlorobenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| 1,2,4-Trimethylbenzene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.49 | 0.300 | mg/kg wet | 2.500 | | 99 | 70-130 | 5 | 25 | |
| 1,2-Dibromoethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 3 | 25 | |
| 1,2-Dichlorobenzene | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 5 | 25 | |
| 1,2-Dichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| 1,2-Dichloropropane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.4 | 25 | |
| 1,3,5-Trimethylbenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| 1,3-Dichlorobenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| 1,3-Dichloropropane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| 1,4-Dichlorobenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 4 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|------|-----|--|
| 1,4-Dioxane - Screen | 57.3 | 5.00 | mg/kg wet | 50.00 | | 115 | 44-241 | 2 | 200 | |
| 1-Chlorohexane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| 2,2-Dichloropropane | 2.53 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.4 | 25 | |
| 2-Butanone | 13.0 | 1.25 | mg/kg wet | 12.50 | | 104 | 70-130 | 12 | 25 | |
| 2-Chlorotoluene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 2 | 25 | |
| 2-Hexanone | 14.3 | 0.500 | mg/kg wet | 12.50 | | 114 | 70-130 | 22 | 25 | |
| 4-Chlorotoluene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 4 | 25 | |
| 4-Isopropyltoluene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| 4-Methyl-2-Pentanone | 12.4 | 0.500 | mg/kg wet | 12.50 | | 99 | 70-130 | 3 | 25 | |
| Acetone | 14.0 | 1.25 | mg/kg wet | 12.50 | | 112 | 70-130 | 15 | 25 | |
| Benzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| Bromobenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Bromochloromethane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.08 | 25 | |
| Bromodichloromethane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 2 | 25 | |
| Bromoform | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 3 | 25 | |
| Bromomethane | 2.63 | 0.100 | mg/kg wet | 2.500 | | 105 | 70-130 | 2 | 25 | |
| Carbon Disulfide | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| Carbon Tetrachloride | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| Chlorobenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Chloroethane | 2.40 | 0.100 | mg/kg wet | 2.500 | | 96 | 70-130 | 9 | 25 | |
| Chloroform | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 0.3 | 25 | |
| Chloromethane | 2.30 | 0.100 | mg/kg wet | 2.500 | | 92 | 70-130 | 2 | 25 | |
| cis-1,2-Dichloroethene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 1 | 25 | |
| cis-1,3-Dichloropropene | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.6 | 25 | |
| Dibromochloromethane | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 4 | 25 | |
| Dibromomethane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 1 | 25 | |
| Dichlorodifluoromethane | 2.10 | 0.0500 | mg/kg wet | 2.500 | | 84 | 70-130 | 0.8 | 25 | |
| Diethyl Ether | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 3 | 25 | |
| Di-isopropyl ether | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 3 | 25 | |
| Ethyl tertiary-butyl ether | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| Ethylbenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| Hexachlorobutadiene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 5 | 25 | |
| Isopropylbenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| Methyl tert-Butyl Ether | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 2 | 25 | |
| Methylene Chloride | 2.48 | 0.250 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| Naphthalene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 5 | 25 | |
| n-Butylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| n-Propylbenzene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 3 | 25 | |
| sec-Butylbenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| Styrene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 4 | 25 | |
| tert-Butylbenzene | 2.93 | 0.0500 | mg/kg wet | 2.500 | | 117 | 70-130 | 3 | 25 | |
| Tertiary-amyl methyl ether | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 4 | 25 | |
| Tetrachloroethene | 1.87 | 0.0500 | mg/kg wet | 2.500 | | 75 | 70-130 | 4 | 25 | |
| Tetrahydrofuran | 2.41 | 0.500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.9 | 25 | |
| Toluene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|---|----|--|
| trans-1,2-Dichloroethene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| trans-1,3-Dichloropropene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Trichloroethene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| Vinyl Acetate | 2.80 | 0.250 | mg/kg wet | 2.500 | | 112 | 70-130 | 5 | 25 | |
| Vinyl Chloride | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 4 | 25 | |
| Xylene O | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| Xylene P,M | 5.20 | 0.100 | mg/kg wet | 5.000 | | 104 | 70-130 | 2 | 25 | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.43 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.43 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.42 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.49 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |

8100M Total Petroleum Hydrocarbons

Batch CE42904 - 3546

Blank

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacontane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |
| Surrogate: O-Terphenyl | 4.83 | | mg/kg wet | 5.000 | | 97 | 40-140 | | | |

LCS

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|-----|--------|--|--|--|
| Decane (C10) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 79 | 40-140 | | | |
| Docosane (C22) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 99 | 40-140 | | | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | | | |
| Eicosane (C20) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 98 | 40-140 | | | |
| Hexacosane (C26) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | | | |
| Hexadecane (C16) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Nonadecane (C19) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 101 | 40-140 | | | |
| Nonane (C9) | 1.8 | 0.2 | mg/kg wet | 2.500 | | 71 | 30-140 | | | |
| Octacosane (C28) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | | | |
| Octadecane (C18) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | | | |
| Tetracosane (C24) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 99 | 40-140 | | | |
| Tetradecane (C14) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 32.6 | 37.5 | mg/kg wet | 35.00 | | 93 | 40-140 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8100M Total Petroleum Hydrocarbons

Batch CE42904 - 3546

| | | | | | | | | | | |
|-------------------------------|------|-----|-----------|-------|--|-----|--------|--|--|--|
| Triacontane (C30) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 79 | 40-140 | | | |
| <i>Surrogate: O-Terphenyl</i> | 5.04 | | mg/kg wet | 5.000 | | 101 | 40-140 | | | |

LCS Dup

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|----|--------|----|----|--|
| Decane (C10) | 1.8 | 0.2 | mg/kg wet | 2.500 | | 74 | 40-140 | 7 | 25 | |
| Docosane (C22) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | 12 | 25 | |
| Dodecane (C12) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 80 | 40-140 | 6 | 25 | |
| Eicosane (C20) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 87 | 40-140 | 12 | 25 | |
| Hexacosane (C26) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | 12 | 25 | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 84 | 40-140 | 6 | 25 | |
| Nonadecane (C19) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | 13 | 25 | |
| Nonane (C9) | 1.7 | 0.2 | mg/kg wet | 2.500 | | 69 | 30-140 | 4 | 25 | |
| Octacosane (C28) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 81 | 40-140 | 11 | 25 | |
| Octadecane (C18) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 87 | 40-140 | 11 | 25 | |
| Tetracosane (C24) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | 11 | 25 | |
| Tetradecane (C14) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 80 | 40-140 | 13 | 25 | |
| Total Petroleum Hydrocarbons | 29.6 | 37.5 | mg/kg wet | 35.00 | | 85 | 40-140 | 10 | 25 | |
| Triacontane (C30) | 1.7 | 0.2 | mg/kg wet | 2.500 | | 70 | 40-140 | 13 | 25 | |

| | | | | | | | | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|
| <i>Surrogate: O-Terphenyl</i> | 4.33 | | mg/kg wet | 5.000 | | 87 | 40-140 | | | |
|-------------------------------|------|--|-----------|-------|--|----|--------|--|--|--|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE43005 - 3546

Blank

| | | | | | | | | | | |
|--|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)pyrene | ND | 0.167 | mg/kg wet | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Chrysene | ND | 0.167 | mg/kg wet | | | | | | | |
| Dibenzo(a,h)Anthracene | ND | 0.167 | mg/kg wet | | | | | | | |
| Fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Fluorene | ND | 0.333 | mg/kg wet | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Phenanthrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 3.07 | | mg/kg wet | 3.333 | | 92 | 30-130 | | | |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 3.23 | | mg/kg wet | 3.333 | | 97 | 30-130 | | | |
| <i>Surrogate: Nitrobenzene-d5</i> | 2.70 | | mg/kg wet | 3.333 | | 81 | 30-130 | | | |
| <i>Surrogate: p-Terphenyl-d14</i> | 3.76 | | mg/kg wet | 3.333 | | 113 | 30-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE43005 - 3546

LCS

| | | | | | | | | | | |
|--|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | 2.86 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Acenaphthene | 2.87 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Acenaphthylene | 2.92 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | | | |
| Anthracene | 2.98 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | | | |
| Benzo(a)anthracene | 3.02 | 0.333 | mg/kg wet | 3.333 | | 91 | 40-140 | | | |
| Benzo(a)pyrene | 2.88 | 0.167 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Benzo(b)fluoranthene | 3.24 | 0.333 | mg/kg wet | 3.333 | | 97 | 40-140 | | | |
| Benzo(g,h,i)perylene | 3.35 | 0.333 | mg/kg wet | 3.333 | | 101 | 40-140 | | | |
| Benzo(k)fluoranthene | 2.76 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | | | |
| Chrysene | 2.91 | 0.167 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Dibenzo(a,h)Anthracene | 3.42 | 0.167 | mg/kg wet | 3.333 | | 103 | 40-140 | | | |
| Fluoranthene | 3.28 | 0.333 | mg/kg wet | 3.333 | | 98 | 40-140 | | | |
| Fluorene | 2.98 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | | | |
| Indeno(1,2,3-cd)Pyrene | 3.42 | 0.333 | mg/kg wet | 3.333 | | 103 | 40-140 | | | |
| Naphthalene | 2.85 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Phenanthrene | 2.96 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | | | |
| Pyrene | 2.91 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 2.74 | | mg/kg wet | 3.333 | | 82 | 30-130 | | | |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 3.05 | | mg/kg wet | 3.333 | | 92 | 30-130 | | | |
| <i>Surrogate: Nitrobenzene-d5</i> | 2.54 | | mg/kg wet | 3.333 | | 76 | 30-130 | | | |
| <i>Surrogate: p-Terphenyl-d14</i> | 3.14 | | mg/kg wet | 3.333 | | 94 | 30-130 | | | |

LCS Dup

| | | | | | | | | | | |
|--|------|-------|-----------|-------|--|-----|--------|-----|----|--|
| 2-Methylnaphthalene | 2.89 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | 0.8 | 30 | |
| Acenaphthene | 2.85 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 0.8 | 30 | |
| Acenaphthylene | 2.87 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 2 | 30 | |
| Anthracene | 2.96 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | 0.9 | 30 | |
| Benzo(a)anthracene | 3.04 | 0.333 | mg/kg wet | 3.333 | | 91 | 40-140 | 0.5 | 30 | |
| Benzo(a)pyrene | 2.96 | 0.167 | mg/kg wet | 3.333 | | 89 | 40-140 | 3 | 30 | |
| Benzo(b)fluoranthene | 3.32 | 0.333 | mg/kg wet | 3.333 | | 100 | 40-140 | 3 | 30 | |
| Benzo(g,h,i)perylene | 3.45 | 0.333 | mg/kg wet | 3.333 | | 103 | 40-140 | 3 | 30 | |
| Benzo(k)fluoranthene | 2.83 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | 2 | 30 | |
| Chrysene | 2.90 | 0.167 | mg/kg wet | 3.333 | | 87 | 40-140 | 0.3 | 30 | |
| Dibenzo(a,h)Anthracene | 3.54 | 0.167 | mg/kg wet | 3.333 | | 106 | 40-140 | 4 | 30 | |
| Fluoranthene | 3.18 | 0.333 | mg/kg wet | 3.333 | | 95 | 40-140 | 3 | 30 | |
| Fluorene | 2.88 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 3 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 3.53 | 0.333 | mg/kg wet | 3.333 | | 106 | 40-140 | 3 | 30 | |
| Naphthalene | 2.81 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | 2 | 30 | |
| Phenanthrene | 2.97 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | 0.2 | 30 | |
| Pyrene | 2.87 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 1 | 30 | |
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 2.63 | | mg/kg wet | 3.333 | | 79 | 30-130 | | | |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 3.01 | | mg/kg wet | 3.333 | | 90 | 30-130 | | | |
| <i>Surrogate: Nitrobenzene-d5</i> | 2.43 | | mg/kg wet | 3.333 | | 73 | 30-130 | | | |
| <i>Surrogate: p-Terphenyl-d14</i> | 3.01 | | mg/kg wet | 3.333 | | 90 | 30-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Classical Chemistry

Batch CE43102 - TCN Prep

Blank

| | | | | | | | | | | |
|---------------|----|------|-----------|--|--|--|--|--|--|--|
| Total Cyanide | ND | 1.00 | mg/kg wet | | | | | | | |
|---------------|----|------|-----------|--|--|--|--|--|--|--|

LCS

| | | | | | | | | | | |
|---------------|------|------|-----------|-------|--|-----|--------|--|--|--|
| Total Cyanide | 5.04 | 1.00 | mg/kg wet | 5.015 | | 100 | 90-110 | | | |
|---------------|------|------|-----------|-------|--|-----|--------|--|--|--|

Reference

| | | | | | | | | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|
| Total Cyanide | 112 | 4.88 | mg/kg wet | 101.0 | | 111 | 31-168 | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|

Reference

| | | | | | | | | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|
| Total Cyanide | 108 | 4.70 | mg/kg wet | 101.0 | | 107 | 31-168 | | | |
|---------------|-----|------|-----------|-------|--|-----|--------|--|--|--|



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

Notes and Definitions

- U Analyte included in the analysis, but not detected
- SM Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).
- J Reported between MDL and MRL
- D Diluted.
- B Present in Method Blank (B).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405662

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 14050662
Date Project Due: 6/6/14
Days For Project: 5 Day

Items to be checked upon receipt:


- | | | | |
|---|-------------------------------|---|---|
| 1. Air Bill Manifest Present? | <input type="checkbox"/> * No | 10. Are the samples properly preserved? | <input type="checkbox"/> Yes |
| Air No.: | | 11. Proper sample containers used? | <input type="checkbox"/> Yes |
| 2. Were Custody Seals Present? | <input type="checkbox"/> No | 12. Any air bubbles in the VOA vials? | <input type="checkbox"/> N/A |
| 3. Were Custody Seals Intact? | <input type="checkbox"/> N/A | 13. Holding times exceeded? | <input type="checkbox"/> No |
| 4. Is Radiation count < 100 CPM? | <input type="checkbox"/> Yes | 14. Sufficient sample volumes? | <input type="checkbox"/> Yes |
| 5. Is a cooler present? | <input type="checkbox"/> Yes | 15. Any Subcontracting needed? | <input type="checkbox"/> No |
| Cooler Temp: <u>2.7</u> | | 16. Are ESS labels on correct containers? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Iced With: <u>Ice</u> | | 17. Were samples received intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Was COC included with samples? | <input type="checkbox"/> Yes | ESS Sample IDs: _____ | |
| 7. Was COC signed and dated by client? | <input type="checkbox"/> Yes | Sub Lab: _____ | |
| 8. Does the COC match the sample | <input type="checkbox"/> Yes | Analysis: _____ | |
| 9. Is COC complete and correct? | <input type="checkbox"/> Yes | TAT: _____ | |
| 18. Was there need to call project manager to discuss status? If yes, please explain. | | | |

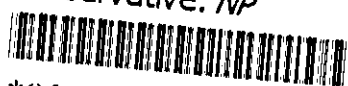
Re log of 14050604 -02, -07, -10, -11

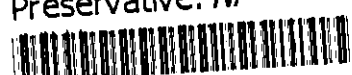
Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 8 oz Soil Jar | 1 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 8 oz Soil Jar | 1 | NP |
| 3 | Yes | 40 ml - VOA | 1 | MeOH |
| 3 | Yes | 8 oz Soil Jar | 1 | NP |
| 4 | Yes | 40 ml - VOA | 1 | MeOH |

Completed By: Monie Bzr Date/Time: 5/30/14 10:00
Reviewed By: [Signature] Date/Time: 5/30/14 1000

014050564-10
Preservative: NP

010000000601562

014050564-2
Preservative: NP

010000000601553

014050564-7
Preservative: NP

010000000601559

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

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 1405564

| | | | |
|---|--|---|--|
| Turn Time If faster than 5 days, prior approval by laboratory is required # | Standard <input checked="" type="checkbox"/> Other <input type="checkbox"/> | Reporting Limits Flow Rec | ESS LAB PROJECT ID 1405564 |
| State where samples were collected from: MA <input checked="" type="checkbox"/> RI <input type="checkbox"/> CT <input type="checkbox"/> NH <input type="checkbox"/> NJ <input type="checkbox"/> NY <input type="checkbox"/> ME <input type="checkbox"/> Other <input type="checkbox"/> | Is this project for any of the following: MA-MCP <input type="checkbox"/> Navy <input type="checkbox"/> USACE <input type="checkbox"/> Other <input type="checkbox"/> | Electronic Deliverable Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Format: Excel <input checked="" type="checkbox"/> Access <input type="checkbox"/> PDF <input checked="" type="checkbox"/> Other <input type="checkbox"/> |

5/20/14
9:50

| Co. Name G&A GeoEnvironmental | | Project # 33554 | | Project Name (20 Char. or less) 62 Allen Ave | | Write Required Analysis | | | | | | | | | | | | | | | |
|---|---------|-------------------------|------|---|---|--|-----------|------------------------------|--------------------|----------------------------|--|--------------------------|--|--------------------|--|--|--|--|--|--|--|
| Contact Person Meg Kilpatrick | | Address 530 Broadway | | City Providence | | State RI | | Zip 02909 | | PO# | | Number of Containers | | Type of Containers | | VOC SO35A/02608 PAA 35503/0220C P2-13 Metals Total Cyanide TPH | | | | | |
| Telephone # 401-421-4140 | | Fax # | | Email Address MKilpatrick@gta.com | | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | | | | | | | | | | | | |
| 1 | 5/16/14 | 8:45 | | | S | 62-3120 S-1 | 26 | 1 | | | | | | | | | | | | | |
| 2 | | 9:00 | | | | 62-3120 S-2 | | 1 | | | | | | | | | | | | | |
| 3 | | 12:00 | | | | 62-3180 S-1A | | 1 | | | | | | | | | | | | | |
| 4 | | 12:10 | | | | 62-3100 S-1D | | 1 | | | | | | | | | | | | | |
| 5 | | 12:20 | | | | 62-3160 S-1C | | 1 | | | | | | | | | | | | | |
| 6 | | 12:30 | | | | 62-3100 S-2 | | 1 | | | | | | | | | | | | | |
| 7 | | 12:45 | | | | 62-3180 S-3 | | 1 | | | | | | | | | | | | | |
| 8 | | 13:20 | | | | 62-3170 S-1A | | 1 | | | | | | | | | | | | | |
| 9 | | 13:30 | | | | 62-3170 S-1B | | 1 | | | | | | | | | | | | | |
| 10 | 5/20/14 | 13:45 | | | | 62-3170 S-2 | | 1 | | | | | | | | | | | | | |
| Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters | | | | | | | | | | | | | | | | | | | | | |
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Internal Use Only | | | | | Preservation Code 1- NP, 2- HCl, 3- H2SO4, 4- HNO3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ | | | | | | | | | | | | | | | | |
| Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No NA: <input checked="" type="checkbox"/> [] Pickup | | | | | Sampled by: BILL FORTUNE / SOCHIA NTRAKIEWICZ | | | | | * client request off hold | | | | | | | | | | | |
| Cooler Temp: 2.7° ice | | | | | Comments: HOLD ALL SAMPLES | | | | | NADID PAGES APPLY. 5/20/14 | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date/Time | | Received by: (Signature) | | Date/Time | | Relinquished by: (Signature) | | Date/Time | | Received by: (Signature) | | Date/Time | | | | | | | |
| | | 5/22/14 1554 | | | | 5/23/14 1554 | | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date/Time | | Received by: (Signature) | | Date/Time | | Relinquished by: (Signature) | | Date/Time | | Received by: (Signature) | | Date/Time | | | | | | | |

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ESS Laboratory

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CHAIN OF CUSTODY

1405662
 Page 2 of 2

| | | |
|--|--|--------------------------------------|
| Turn Time <u>Standard</u> Other _____ If faster than 5 days, prior approval by laboratory is required # _____ | Reporting Limits <u>RIDEM RDEC</u> | ESS LAB PROJECT ID <u>1405564</u> |
| State where samples were collected from: MA <input checked="" type="checkbox"/> RI <input type="checkbox"/> CT <input type="checkbox"/> NH <input type="checkbox"/> NJ <input type="checkbox"/> NY <input type="checkbox"/> ME <input type="checkbox"/> Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ | 9/30 |
| Is this project for any of the following: MA-MCP Navy USACE Other _____ | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ | |

| Co. Name <u>GZA GeoEnvironmental</u> | | Project # <u>33554</u> | Project Name (20 Char. or less) <u>642 Allens Ave</u> | | Number of Containers <u>1</u> | Type of Containers <u>10L 5055N 820B</u> | Write Required Analysis | | | | | | | | | | | | | | | | | |
|---|--------------------|--|--|----------|----------------------------------|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Contact Person <u>Meg</u> <u>530 Broadway Kulpnick</u> | | Address <u>Providence RI 530 Broadway</u> | | | | | VOL 5055N 820B PAH 3550B/820C PP-13 RATES 604/700 Total Cyanide 10005 TPH 8100M | | | | | | | | | | | | | | | | | |
| City <u>Providence</u> | State <u>RI</u> | Zip <u>02909</u> | PO# | | | | | | | | | | | | | | | | | | | | | |
| Telephone # <u>401-421-4140</u> | Fax # | Email Address <u>M.Kulpnick@gzs.com</u> | | | | | | | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | | | | | | | | | | | | | | | | | |
| <u>4</u> <u>W</u> <u>5/23/14</u> | <u>5/23/14</u> | <u>800</u> | | <u>X</u> | <u>X</u> | <u>TRIP BLANK - 52314</u> | <u>6</u> | | | | | | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | | |
|--|-----------------------|---|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Internal Use Only | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- Zn Act, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No NA: <input checked="" type="checkbox"/> [] Pickup | | Sampled by: <u>BILL FORTUNE / SOPHIA NARKIEWICZ</u> |
| Cooler Temp: <u>2.7 °C</u> <u>W 5/23/14</u> | [] Technicians _____ | Comments: <u>HOLD ALL SAMPLES N6210 RATES APPLY</u> |

| | | | | | | | |
|--|----------------------------------|--|----------------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <u>[Signature]</u> | Date/Time <u>5/23/14 1500</u> | Received by: (Signature) <u>[Signature]</u> | Date/Time <u>5/23/14 1554</u> | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A
 Please fax all changes to Chain of Custody in writing.
 1 (White) Lab Copy 2 (Yellow) Client Receipt
 10/26/04 A

Page 43 of 43



CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554.00 T-23)
ESS Laboratory Work Order Number: 1405669

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 5:11 pm, Jun 06, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

SAMPLE RECEIPT

The following samples were received on May 30, 2014 for the analyses specified on the enclosed Chain of Custody Record.

These samples were originally received on hold on May 27, 2014.

| <u>Lab Number</u> | <u>Sample Name</u> | <u>Matrix</u> | <u>Analysis</u> |
|-------------------|--------------------|---------------|---|
| 1405669-01 | GZ-319D S-3 | Soil | 6010B, 7471A, 7740, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405669-02 | GZ-314D S-3 | Soil | 6010B, 7471A, 7841, 8100M, 8260B, 8270C, 9014 |
| 1405669-03 | Trip Blank | Soil | 8260B |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

1405669-01 [Present in Method Blank \(B\).](#)
Chloroform

1405669-01 [Surrogate recovery\(ies\) outside of criteria due to matrix \(UCM/coelution/matrix is present\) \(SM\).](#)
Dibromofluoromethane (132% @ 70-130%)

1405669-02 [Present in Method Blank \(B\).](#)
Chloroform

1405669-03 [Present in Method Blank \(B\).](#)
Chloroform

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-319D S-3
Date Sampled: 05/27/14 12:30
Percent Solids: 90

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | 5.5 (4.6) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |
| Arsenic | 6.2 (2.3) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |
| Beryllium | 0.40 (0.10) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |
| Cadmium | ND (0.47) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |
| Chromium | 9.4 (0.9) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |
| Copper | 20.8 (2.3) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |
| Lead | 58.0 (4.6) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |
| Mercury | 0.359 (0.036) | | 7471A | | 1 | JP | 06/03/14 11:40 | 0.62 | 40 | CF40204 |
| Nickel | 7.4 (2.3) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |
| Selenium | ND (2.33) | | 7740 | | 5 | NAR | 06/05/14 21:35 | 2.41 | 100 | CF40203 |
| Silver | ND (0.47) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |
| Thallium | ND (1.15) | | 7841 | | 5 | NAR | 06/06/14 1:03 | 2.41 | 100 | CF40203 |
| Zinc | 23.5 (2.3) | | 6010B | | 1 | KJK | 06/02/14 21:00 | 2.41 | 100 | CF40203 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-319D S-3
Date Sampled: 05/27/14 12:30
Percent Solids: 90
Initial Volume: 33.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0616) | 0.0054 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,1,1-Trichloroethane | ND (0.0308) | 0.0054 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,1,2,2-Tetrachloroethane | ND (0.0308) | 0.0084 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,1,2-Trichloroethane | ND (0.0308) | 0.0077 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,1-Dichloroethane | ND (0.0308) | 0.0049 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,1-Dichloroethene | ND (0.0308) | 0.0076 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,1-Dichloropropene | ND (0.0308) | 0.0047 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,2,3-Trichlorobenzene | ND (0.0308) | 0.0103 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,2,3-Trichloropropane | ND (0.0308) | 0.0076 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,2,4-Trichlorobenzene | ND (0.0308) | 0.0068 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,2,4-Trimethylbenzene | 0.0629 (0.0308) | 0.0059 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,2-Dibromo-3-Chloropropane | ND (0.185) | 0.0616 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,2-Dibromoethane | ND (0.0308) | 0.0078 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,2-Dichlorobenzene | ND (0.0308) | 0.0044 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,2-Dichloroethane | ND (0.0308) | 0.0083 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,2-Dichloropropane | ND (0.0308) | 0.0081 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,3,5-Trimethylbenzene | 0.0321 (0.0308) | 0.0054 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,3-Dichlorobenzene | ND (0.0308) | 0.0039 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,3-Dichloropropane | ND (0.0308) | 0.0069 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,4-Dichlorobenzene | ND (0.0308) | 0.0082 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1,4-Dioxane - Screen | ND (3.08) | 1.03 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 1-Chlorohexane | ND (0.0308) | 0.0059 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 2,2-Dichloropropane | ND (0.0616) | 0.0105 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 2-Butanone | ND (0.770) | 0.178 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 2-Chlorotoluene | ND (0.0308) | 0.0087 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 2-Hexanone | ND (0.308) | 0.0531 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 4-Chlorotoluene | ND (0.0308) | 0.0040 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 4-Isopropyltoluene | ND (0.0308) | 0.0055 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| 4-Methyl-2-Pentanone | ND (0.308) | 0.0371 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Acetone | ND (0.770) | 0.228 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Benzene | 0.0536 (0.0308) | 0.0050 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Bromobenzene | ND (0.0308) | 0.0084 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-319D S-3
Date Sampled: 05/27/14 12:30
Percent Solids: 90
Initial Volume: 33.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0308) | 0.0100 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Bromodichloromethane | ND (0.0308) | 0.0043 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Bromoform | ND (0.0308) | 0.0089 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Bromomethane | ND (0.0616) | 0.0206 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Carbon Disulfide | ND (0.0308) | 0.0046 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Carbon Tetrachloride | ND (0.0308) | 0.0054 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Chlorobenzene | ND (0.0308) | 0.0049 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Chloroethane | ND (0.0616) | 0.0205 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Chloroform | B, J 0.0086 (0.0308) | 0.0063 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Chloromethane | ND (0.0616) | 0.0078 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| cis-1,2-Dichloroethene | ND (0.0308) | 0.0076 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| cis-1,3-Dichloropropene | ND (0.0308) | 0.0070 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Dibromochloromethane | ND (0.0308) | 0.0078 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Dibromomethane | ND (0.0308) | 0.0097 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Dichlorodifluoromethane | ND (0.0308) | 0.0054 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Diethyl Ether | ND (0.0308) | 0.0078 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Di-isopropyl ether | ND (0.0308) | 0.0058 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Ethyl tertiary-butyl ether | ND (0.0308) | 0.0078 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Ethylbenzene | 0.0561 (0.0308) | 0.0040 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Hexachlorobutadiene | ND (0.0308) | 0.0103 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Isopropylbenzene | ND (0.0308) | 0.0054 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Methyl tert-Butyl Ether | ND (0.0308) | 0.0049 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Methylene Chloride | ND (0.154) | 0.0081 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Naphthalene | 0.428 (0.0308) | 0.0081 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| n-Butylbenzene | J 0.0154 (0.0308) | 0.0076 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| n-Propylbenzene | J 0.0142 (0.0308) | 0.0075 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| sec-Butylbenzene | ND (0.0308) | 0.0041 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Styrene | 0.0419 (0.0308) | 0.0041 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| tert-Butylbenzene | ND (0.0308) | 0.0072 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Tertiary-amyl methyl ether | ND (0.0308) | 0.0044 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Tetrachloroethene | ND (0.0308) | 0.0103 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Tetrahydrofuran | ND (0.308) | 0.0795 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-319D S-3
Date Sampled: 05/27/14 12:30
Percent Solids: 90
Initial Volume: 33.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.0801 (0.0308) | 0.0078 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| trans-1,2-Dichloroethene | ND (0.0308) | 0.0101 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| trans-1,3-Dichloropropene | ND (0.0308) | 0.0095 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Trichloroethene | ND (0.0308) | 0.0063 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Trichlorofluoromethane | ND (0.0308) | 0.0081 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Vinyl Acetate | ND (0.154) | 0.0063 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Vinyl Chloride | ND (0.0308) | 0.0102 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Xylene O | 0.0314 (0.0308) | 0.0059 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Xylene P,M | 0.127 (0.0616) | 0.0120 | 8260B | | 1 | 06/03/14 13:12 | CXF0027 | CF40332 |
| Xylenes (Total) | 0.158 (0.0616) | | 8260B | | 1 | 06/03/14 13:12 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 126 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 124 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 132 % | SM | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 127 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-319D S-3
Date Sampled: 05/27/14 12:30
Percent Solids: 90
Initial Volume: 19.2
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/30/14 16:39

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 482 (43.6) | | 8100M | | 1 | 05/31/14 2:44 | CXE0421 | CE43006 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 93 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-319D S-3
Date Sampled: 05/27/14 12:30
Percent Solids: 90
Initial Volume: 15.1
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/30/14 12:49

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | 0.389 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Acenaphthene | ND (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Acenaphthylene | 0.777 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Anthracene | 0.401 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Benzo(a)anthracene | 0.952 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Benzo(a)pyrene | 0.778 (0.185) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Benzo(b)fluoranthene | 1.63 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Benzo(g,h,i)perylene | 0.592 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Benzo(k)fluoranthene | 0.543 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Chrysene | 1.07 (0.185) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Dibenzo(a,h)Anthracene | 0.217 (0.185) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Fluoranthene | 1.62 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Fluorene | ND (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Indeno(1,2,3-cd)Pyrene | 0.602 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Naphthalene | 1.44 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Phenanthrene | 1.22 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |
| Pyrene | 1.21 (0.369) | | 8270C | | 1 | 06/02/14 18:20 | CXF0001 | CE43005 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|-----------------------------------|------------------|------------------|---------------|
| Surrogate: 1,2-Dichlorobenzene-d4 | 64 % | | 30-130 |
| Surrogate: 2-Fluorobiphenyl | 71 % | | 30-130 |
| Surrogate: Nitrobenzene-d5 | 61 % | | 30-130 |
| Surrogate: p-Terphenyl-d14 | 74 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-319D S-3
Date Sampled: 05/27/14 12:30
Percent Solids: 90

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-01
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.06) | | 9014 | | 1 | JLK | 05/31/14 9:42 | mg/kg dry | CE43102 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-314D S-3
Date Sampled: 05/27/14 14:20
Percent Solids: 86

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.8) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Arsenic | 3.8 (2.4) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Beryllium | 0.54 (0.10) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Cadmium | ND (0.48) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Chromium | 7.7 (1.0) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Copper | 13.2 (2.4) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Lead | 30.7 (4.8) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Mercury | 0.047 (0.034) | | 7471A | | 1 | JP | 06/03/14 11:54 | 0.69 | 40 | CF40204 |
| Nickel | 7.2 (2.4) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Selenium | ND (4.8) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Silver | ND (0.48) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |
| Thallium | ND (1.19) | | 7841 | | 5 | NAR | 06/06/14 1:50 | 2.43 | 100 | CF40203 |
| Zinc | 28.7 (2.4) | | 6010B | | 1 | KJK | 06/02/14 21:21 | 2.43 | 100 | CF40203 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-314D S-3
Date Sampled: 05/27/14 14:20
Percent Solids: 86
Initial Volume: 32.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0700) | 0.0061 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,1,1-Trichloroethane | ND (0.0350) | 0.0062 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,1,2,2-Tetrachloroethane | ND (0.0350) | 0.0095 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,1,2-Trichloroethane | ND (0.0350) | 0.0087 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,1-Dichloroethane | ND (0.0350) | 0.0056 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,1-Dichloroethene | ND (0.0350) | 0.0086 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,1-Dichloropropene | ND (0.0350) | 0.0054 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,2,3-Trichlorobenzene | ND (0.0350) | 0.0117 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,2,3-Trichloropropane | ND (0.0350) | 0.0087 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,2,4-Trichlorobenzene | ND (0.0350) | 0.0077 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,2,4-Trimethylbenzene | 13.3 (1.75) | 0.336 | 8260B | | 50 | 06/03/14 17:24 | CXF0011 | CF40243 |
| 1,2-Dibromo-3-Chloropropane | ND (0.210) | 0.0700 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,2-Dibromoethane | ND (0.0350) | 0.0089 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,2-Dichlorobenzene | ND (0.0350) | 0.0050 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,2-Dichloroethane | ND (0.0350) | 0.0094 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,2-Dichloropropane | ND (0.0350) | 0.0092 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,3,5-Trimethylbenzene | 2.36 (0.0350) | 0.0062 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,3-Dichlorobenzene | ND (0.0350) | 0.0044 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,3-Dichloropropane | ND (0.0350) | 0.0078 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,4-Dichlorobenzene | ND (0.0350) | 0.0093 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1,4-Dioxane - Screen | ND (3.50) | 1.17 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 1-Chlorohexane | ND (0.0350) | 0.0066 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 2,2-Dichloropropane | ND (0.0700) | 0.0120 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 2-Butanone | ND (0.875) | 0.202 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 2-Chlorotoluene | ND (0.0350) | 0.0099 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 2-Hexanone | ND (0.350) | 0.0603 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 4-Chlorotoluene | ND (0.0350) | 0.0045 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 4-Isopropyltoluene | 1.50 (0.0350) | 0.0062 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| 4-Methyl-2-Pentanone | ND (0.350) | 0.0421 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Acetone | ND (0.875) | 0.259 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Benzene | 1.97 (0.0350) | 0.0057 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Bromobenzene | ND (0.0350) | 0.0096 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-314D S-3
Date Sampled: 05/27/14 14:20
Percent Solids: 86
Initial Volume: 32.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0350) | 0.0113 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Bromodichloromethane | ND (0.0350) | 0.0048 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Bromoform | ND (0.0350) | 0.0101 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Bromomethane | ND (0.0700) | 0.0234 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Carbon Disulfide | ND (0.0350) | 0.0052 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Carbon Tetrachloride | ND (0.0350) | 0.0061 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Chlorobenzene | ND (0.0350) | 0.0055 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Chloroethane | ND (0.0700) | 0.0233 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Chloroform | B, J 0.0112 (0.0350) | 0.0072 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Chloromethane | ND (0.0700) | 0.0089 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| cis-1,2-Dichloroethene | ND (0.0350) | 0.0087 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| cis-1,3-Dichloropropene | ND (0.0350) | 0.0079 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Dibromochloromethane | ND (0.0350) | 0.0088 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Dibromomethane | ND (0.0350) | 0.0111 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Dichlorodifluoromethane | ND (0.0350) | 0.0061 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Diethyl Ether | ND (0.0350) | 0.0089 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Di-isopropyl ether | ND (0.0350) | 0.0066 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Ethyl tertiary-butyl ether | ND (0.0350) | 0.0088 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Ethylbenzene | 5.98 (0.0350) | 0.0045 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Hexachlorobutadiene | ND (0.0350) | 0.0117 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Isopropylbenzene | 0.883 (0.0350) | 0.0062 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Methyl tert-Butyl Ether | ND (0.0350) | 0.0056 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Methylene Chloride | ND (0.175) | 0.0092 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Naphthalene | 120 (1.75) | 0.458 | 8260B | | 50 | 06/03/14 17:24 | CXF0011 | CF40243 |
| n-Butylbenzene | 2.61 (0.0350) | 0.0086 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| n-Propylbenzene | 0.518 (0.0350) | 0.0085 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| sec-Butylbenzene | 0.469 (0.0350) | 0.0047 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Styrene | ND (0.0350) | 0.0046 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| tert-Butylbenzene | 0.0574 (0.0350) | 0.0082 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Tertiary-amyl methyl ether | ND (0.0350) | 0.0050 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Tetrachloroethene | ND (0.0350) | 0.0117 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Tetrahydrofuran | ND (0.350) | 0.0903 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-314D S-3
 Date Sampled: 05/27/14 14:20
 Percent Solids: 86
 Initial Volume: 32.9
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1405669
 ESS Laboratory Sample ID: 1405669-02
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|-----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.430 (0.0350) | 0.0089 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| trans-1,2-Dichloroethene | ND (0.0350) | 0.0115 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| trans-1,3-Dichloropropene | ND (0.0350) | 0.0108 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Trichloroethene | ND (0.0350) | 0.0072 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Trichlorofluoromethane | ND (0.0350) | 0.0092 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Vinyl Acetate | ND (0.175) | 0.0072 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Vinyl Chloride | ND (0.0350) | 0.0115 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Xylene O | 2.03 (0.0350) | 0.0067 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Xylene P,M | 0.638 (0.0700) | 0.0136 | 8260B | | 1 | 06/02/14 15:50 | CXF0011 | CF40243 |
| Xylenes (Total) | 2.67 (0.0700) | | 8260B | | 1 | 06/02/14 15:50 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 123 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 118 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 129 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 129 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-314D S-3
Date Sampled: 05/27/14 14:20
Percent Solids: 86
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 5/30/14 16:39

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 6920 (226) | | 8100M | | 5 | 06/02/14 13:13 | CXF0006 | CE43006 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>102 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-314D S-3
Date Sampled: 05/27/14 14:20
Percent Solids: 86
Initial Volume: 14.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 5/30/14 12:49

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | 141 (20.0) | | 8270C | | 50 | 06/02/14 19:29 | CXF0001 | CE43005 |
| Acenaphthene | 36.1 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Acenaphthylene | 8.01 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Anthracene | 25.9 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Benzo(a)anthracene | 14.1 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Benzo(a)pyrene | 10.7 (1.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Benzo(b)fluoranthene | 7.49 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Benzo(g,h,i)perylene | 2.95 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Benzo(k)fluoranthene | 3.02 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Chrysene | 12.5 (1.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Dibenzo(a,h)Anthracene | ND (1.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Fluoranthene | 27.7 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Fluorene | 24.6 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Indeno(1,2,3-cd)Pyrene | 2.56 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |
| Naphthalene | 127 (20.0) | | 8270C | | 50 | 06/02/14 19:29 | CXF0001 | CE43005 |
| Phenanthrene | 106 (20.0) | | 8270C | | 50 | 06/02/14 19:29 | CXF0001 | CE43005 |
| Pyrene | 34.5 (2.00) | | 8270C | | 5 | 06/02/14 14:18 | CXF0001 | CE43005 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|-----------------------------------|------------------|------------------|---------------|
| Surrogate: 1,2-Dichlorobenzene-d4 | 45 % | | 30-130 |
| Surrogate: 2-Fluorobiphenyl | 43 % | | 30-130 |
| Surrogate: Nitrobenzene-d5 | 78 % | | 30-130 |
| Surrogate: p-Terphenyl-d14 | 60 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-314D S-3
Date Sampled: 05/27/14 14:20
Percent Solids: 86

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-02
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | ND (1.10) | | 9014 | | 1 | JLK | 05/31/14 9:42 | mg/kg dry | CE43102 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank
Date Sampled: 05/27/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-03
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.100) | 0.0087 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,1,1-Trichloroethane | ND (0.0500) | 0.0088 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,1,2,2-Tetrachloroethane | ND (0.0500) | 0.0136 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,1,2-Trichloroethane | ND (0.0500) | 0.0125 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,1-Dichloroethane | ND (0.0500) | 0.0080 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,1-Dichloroethene | ND (0.0500) | 0.0123 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,1-Dichloropropene | ND (0.0500) | 0.0077 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,2,3-Trichlorobenzene | ND (0.0500) | 0.0167 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,2,3-Trichloropropane | ND (0.0500) | 0.0124 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,2,4-Trichlorobenzene | ND (0.0500) | 0.0110 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,2,4-Trimethylbenzene | ND (0.0500) | 0.0096 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,2-Dibromo-3-Chloropropane | ND (0.300) | 0.100 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,2-Dibromoethane | ND (0.0500) | 0.0127 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,2-Dichlorobenzene | ND (0.0500) | 0.0071 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,2-Dichloroethane | ND (0.0500) | 0.0134 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,2-Dichloropropane | ND (0.0500) | 0.0131 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,3,5-Trimethylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,3-Dichlorobenzene | ND (0.0500) | 0.0063 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,3-Dichloropropane | ND (0.0500) | 0.0112 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,4-Dichlorobenzene | ND (0.0500) | 0.0133 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1,4-Dioxane - Screen | ND (5.00) | 1.67 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 1-Chlorohexane | ND (0.0500) | 0.0095 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 2,2-Dichloropropane | ND (0.100) | 0.0171 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 2-Butanone | ND (1.25) | 0.289 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 2-Chlorotoluene | ND (0.0500) | 0.0141 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 2-Hexanone | ND (0.500) | 0.0861 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 4-Chlorotoluene | ND (0.0500) | 0.0065 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 4-Isopropyltoluene | ND (0.0500) | 0.0089 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| 4-Methyl-2-Pentanone | ND (0.500) | 0.0602 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Acetone | ND (1.25) | 0.370 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Benzene | ND (0.0500) | 0.0081 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Bromobenzene | ND (0.0500) | 0.0137 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank
Date Sampled: 05/27/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-03
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0500) | 0.0162 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Bromodichloromethane | ND (0.0500) | 0.0069 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Bromoform | ND (0.0500) | 0.0144 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Bromomethane | ND (0.100) | 0.0334 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Carbon Disulfide | ND (0.0500) | 0.0074 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Carbon Tetrachloride | ND (0.0500) | 0.0087 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Chlorobenzene | ND (0.0500) | 0.0079 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Chloroethane | ND (0.100) | 0.0333 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Chloroform | B, J 0.0180 (0.0500) | 0.0103 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Chloromethane | ND (0.100) | 0.0127 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| cis-1,2-Dichloroethene | ND (0.0500) | 0.0124 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| cis-1,3-Dichloropropene | ND (0.0500) | 0.0113 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Dibromochloromethane | ND (0.0500) | 0.0126 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Dibromomethane | ND (0.0500) | 0.0158 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Dichlorodifluoromethane | ND (0.0500) | 0.0087 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Diethyl Ether | ND (0.0500) | 0.0127 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Di-isopropyl ether | ND (0.0500) | 0.0094 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Ethyl tertiary-butyl ether | ND (0.0500) | 0.0126 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Ethylbenzene | ND (0.0500) | 0.0065 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Hexachlorobutadiene | ND (0.0500) | 0.0167 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Isopropylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Methyl tert-Butyl Ether | ND (0.0500) | 0.0080 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Methylene Chloride | ND (0.250) | 0.0131 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Naphthalene | ND (0.0500) | 0.0131 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| n-Butylbenzene | ND (0.0500) | 0.0123 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| n-Propylbenzene | ND (0.0500) | 0.0122 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| sec-Butylbenzene | ND (0.0500) | 0.0067 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Styrene | ND (0.0500) | 0.0066 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| tert-Butylbenzene | ND (0.0500) | 0.0117 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Tertiary-amyl methyl ether | ND (0.0500) | 0.0072 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Tetrachloroethene | ND (0.0500) | 0.0167 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Tetrahydrofuran | ND (0.500) | 0.129 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank
Date Sampled: 05/27/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1405669
ESS Laboratory Sample ID: 1405669-03
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0500) | 0.0127 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| trans-1,2-Dichloroethene | ND (0.0500) | 0.0164 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| trans-1,3-Dichloropropene | ND (0.0500) | 0.0154 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Trichloroethene | ND (0.0500) | 0.0103 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Trichlorofluoromethane | ND (0.0500) | 0.0132 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Vinyl Acetate | ND (0.250) | 0.0103 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Vinyl Chloride | ND (0.0500) | 0.0165 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Xylene O | ND (0.0500) | 0.0096 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Xylene P,M | ND (0.100) | 0.0194 | 8260B | | 1 | 06/02/14 12:41 | CXF0011 | CF40243 |
| Xylenes (Total) | ND (0.100) | | 8260B | | 1 | 06/02/14 12:41 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>88 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>90 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>92 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>93 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CF40203 - 3050B

Blank

| | | | |
|-----------|----|------|-----------|
| Antimony | ND | 5.0 | mg/kg wet |
| Arsenic | ND | 2.5 | mg/kg wet |
| Beryllium | ND | 0.10 | mg/kg wet |
| Cadmium | ND | 0.50 | mg/kg wet |
| Chromium | ND | 1.0 | mg/kg wet |
| Copper | ND | 2.5 | mg/kg wet |
| Lead | ND | 5.0 | mg/kg wet |
| Nickel | ND | 2.5 | mg/kg wet |
| Selenium | ND | 0.50 | mg/kg wet |
| Selenium | ND | 5.0 | mg/kg wet |
| Silver | ND | 0.50 | mg/kg wet |
| Thallium | ND | 0.25 | mg/kg wet |
| Zinc | ND | 2.5 | mg/kg wet |

LCS

| | | | | | | |
|-----------|------|------|-----------|-------|----|--------|
| Antimony | 107 | 16.1 | mg/kg wet | 116.0 | 92 | 80-120 |
| Arsenic | 109 | 8.1 | mg/kg wet | 122.0 | 89 | 80-120 |
| Beryllium | 48.5 | 0.34 | mg/kg wet | 54.30 | 89 | 80-120 |
| Cadmium | 79.1 | 1.62 | mg/kg wet | 88.00 | 90 | 80-120 |
| Chromium | 91.0 | 3.2 | mg/kg wet | 102.0 | 89 | 80-120 |
| Copper | 71.7 | 8.1 | mg/kg wet | 78.00 | 92 | 80-120 |
| Lead | 89.8 | 16.1 | mg/kg wet | 94.50 | 95 | 80-120 |
| Nickel | 53.1 | 8.1 | mg/kg wet | 56.30 | 94 | 80-120 |
| Selenium | 138 | 81.0 | mg/kg wet | 157.0 | 88 | 80-120 |
| Selenium | 132 | 16.1 | mg/kg wet | 157.0 | 84 | 80-120 |
| Silver | 30.5 | 1.62 | mg/kg wet | 34.20 | 89 | 80-120 |
| Thallium | 103 | 39.9 | mg/kg wet | 116.0 | 88 | 80-120 |
| Zinc | 175 | 8.1 | mg/kg wet | 207.0 | 85 | 80-120 |

LCS Dup

| | | | | | | | | |
|----------|------|------|-----------|-------|----|--------|------|----|
| Arsenic | 105 | 7.8 | mg/kg wet | 122.0 | 86 | 80-120 | 4 | 20 |
| Cadmium | 78.1 | 1.57 | mg/kg wet | 88.00 | 89 | 80-120 | 1 | 20 |
| Chromium | 89.8 | 3.1 | mg/kg wet | 102.0 | 88 | 80-120 | 1 | 20 |
| Lead | 83.7 | 15.6 | mg/kg wet | 94.50 | 89 | 80-120 | 7 | 20 |
| Selenium | 129 | 15.6 | mg/kg wet | 157.0 | 82 | 80-120 | 2 | 20 |
| Selenium | 141 | 78.5 | mg/kg wet | 157.0 | 90 | 80-120 | 2 | 20 |
| Silver | 30.5 | 1.57 | mg/kg wet | 34.20 | 89 | 80-120 | 0.03 | 20 |
| Thallium | 103 | 38.7 | mg/kg wet | 116.0 | 89 | 80-120 | 0.8 | 20 |
| Zinc | 171 | 7.8 | mg/kg wet | 207.0 | 83 | 80-120 | 2 | 20 |

Batch CF40204 - 7471A

Blank

| | | | |
|---------|----|-------|-----------|
| Mercury | ND | 0.033 | mg/kg wet |
|---------|----|-------|-----------|

LCS

| | | | | | | |
|---------|------|------|-----------|-------|-----|--------|
| Mercury | 3.98 | 1.52 | mg/kg wet | 3.980 | 100 | 80-120 |
|---------|------|------|-----------|-------|-----|--------|

LCS Dup



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CF40204 - 7471A

| | | | | | | | | | | |
|---------|------|------|-----------|-------|--|----|--------|---|----|--|
| Mercury | 3.62 | 1.55 | mg/kg wet | 3.980 | | 91 | 80-120 | 9 | 20 | |
|---------|------|------|-----------|-------|--|----|--------|---|----|--|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| Blank | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|-----|--------|--|--|---|
| Chloroform | 0.0140 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.39 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.40 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.49 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.44 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |

LCS

| | | | | | | | | | | |
|---------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.45 | 0.100 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,1-Dichloroethane | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 1,1-Dichloroethene | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 1,1-Dichloropropene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,2,3-Trichloropropane | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.36 | 0.300 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 1,2-Dibromoethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,2-Dichloroethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2-Dichloropropane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,3-Dichloropropane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,4-Dioxane - Screen | 55.9 | 5.00 | mg/kg wet | 50.00 | | 112 | 44-241 | | | |
| 1-Chlorohexane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 2,2-Dichloropropane | 2.52 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 2-Butanone | 11.5 | 1.25 | mg/kg wet | 12.50 | | 92 | 70-130 | | | |
| 2-Chlorotoluene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 2-Hexanone | 11.5 | 0.500 | mg/kg wet | 12.50 | | 92 | 70-130 | | | |
| 4-Chlorotoluene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 4-Isopropyltoluene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.1 | 0.500 | mg/kg wet | 12.50 | | 97 | 70-130 | | | |
| Acetone | 12.1 | 1.25 | mg/kg wet | 12.50 | | 96 | 70-130 | | | |
| Benzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Bromobenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromochloromethane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Bromodichloromethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromoform | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Bromomethane | 2.58 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Carbon Disulfide | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Carbon Tetrachloride | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Chlorobenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Chloroethane | 2.20 | 0.100 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Chloroform | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Chloromethane | 2.26 | 0.100 | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Dibromochloromethane | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Dibromomethane | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Dichlorodifluoromethane | 2.08 | 0.0500 | mg/kg wet | 2.500 | | 83 | 70-130 | | | |
| Diethyl Ether | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Di-isopropyl ether | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Ethylbenzene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Hexachlorobutadiene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Isopropylbenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Methyl tert-Butyl Ether | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Methylene Chloride | 2.44 | 0.250 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Naphthalene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| n-Butylbenzene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| n-Propylbenzene | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| sec-Butylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Styrene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| tert-Butylbenzene | 2.86 | 0.0500 | mg/kg wet | 2.500 | | 114 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Tetrachloroethene | 1.80 | 0.0500 | mg/kg wet | 2.500 | | 72 | 70-130 | | | |
| Tetrahydrofuran | 2.43 | 0.500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Toluene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Trichloroethene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Vinyl Acetate | 2.68 | 0.250 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Vinyl Chloride | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Xylene O | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Xylene P,M | 5.08 | 0.100 | mg/kg wet | 5.000 | | 102 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.39 | | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.38 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.36 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.45 | | mg/kg wet | 2.500 | | 98 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|-----|-----|--|
| 1,1,1,2-Tetrachloroethane | 2.52 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | 3 | 25 | |
| 1,1,1-Trichloroethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 2 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| 1,1,2-Trichloroethane | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.7 | 25 | |
| 1,1-Dichloroethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| 1,1-Dichloroethene | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 1 | 25 | |
| 1,1-Dichloropropene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 2 | 25 | |
| 1,2,3-Trichlorobenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 3 | 25 | |
| 1,2,3-Trichloropropane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 9 | 25 | |
| 1,2,4-Trichlorobenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| 1,2,4-Trimethylbenzene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.49 | 0.300 | mg/kg wet | 2.500 | | 99 | 70-130 | 5 | 25 | |
| 1,2-Dibromoethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 3 | 25 | |
| 1,2-Dichlorobenzene | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 5 | 25 | |
| 1,2-Dichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| 1,2-Dichloropropane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.4 | 25 | |
| 1,3,5-Trimethylbenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| 1,3-Dichlorobenzene | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| 1,3-Dichloropropane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| 1,4-Dichlorobenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 4 | 25 | |
| 1,4-Dioxane - Screen | 57.3 | 5.00 | mg/kg wet | 50.00 | | 115 | 44-241 | 2 | 200 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|------|----|--|
| 1-Chlorohexane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| 2,2-Dichloropropane | 2.53 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | 0.4 | 25 | |
| 2-Butanone | 13.0 | 1.25 | mg/kg wet | 12.50 | | 104 | 70-130 | 12 | 25 | |
| 2-Chlorotoluene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 2 | 25 | |
| 2-Hexanone | 14.3 | 0.500 | mg/kg wet | 12.50 | | 114 | 70-130 | 22 | 25 | |
| 4-Chlorotoluene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 4 | 25 | |
| 4-Isopropyltoluene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| 4-Methyl-2-Pentanone | 12.4 | 0.500 | mg/kg wet | 12.50 | | 99 | 70-130 | 3 | 25 | |
| Acetone | 14.0 | 1.25 | mg/kg wet | 12.50 | | 112 | 70-130 | 15 | 25 | |
| Benzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| Bromobenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Bromochloromethane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.08 | 25 | |
| Bromodichloromethane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 2 | 25 | |
| Bromoform | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 3 | 25 | |
| Bromomethane | 2.63 | 0.100 | mg/kg wet | 2.500 | | 105 | 70-130 | 2 | 25 | |
| Carbon Disulfide | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| Carbon Tetrachloride | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| Chlorobenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Chloroethane | 2.40 | 0.100 | mg/kg wet | 2.500 | | 96 | 70-130 | 9 | 25 | |
| Chloroform | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 0.3 | 25 | |
| Chloromethane | 2.30 | 0.100 | mg/kg wet | 2.500 | | 92 | 70-130 | 2 | 25 | |
| cis-1,2-Dichloroethene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 1 | 25 | |
| cis-1,3-Dichloropropene | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.6 | 25 | |
| Dibromochloromethane | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 4 | 25 | |
| Dibromomethane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 1 | 25 | |
| Dichlorodifluoromethane | 2.10 | 0.0500 | mg/kg wet | 2.500 | | 84 | 70-130 | 0.8 | 25 | |
| Diethyl Ether | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 3 | 25 | |
| Di-isopropyl ether | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 3 | 25 | |
| Ethyl tertiary-butyl ether | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 2 | 25 | |
| Ethylbenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| Hexachlorobutadiene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 5 | 25 | |
| Isopropylbenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| Methyl tert-Butyl Ether | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 2 | 25 | |
| Methylene Chloride | 2.48 | 0.250 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| Naphthalene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 5 | 25 | |
| n-Butylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| n-Propylbenzene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 3 | 25 | |
| sec-Butylbenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| Styrene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 4 | 25 | |
| tert-Butylbenzene | 2.93 | 0.0500 | mg/kg wet | 2.500 | | 117 | 70-130 | 3 | 25 | |
| Tertiary-amyl methyl ether | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 4 | 25 | |
| Tetrachloroethene | 1.87 | 0.0500 | mg/kg wet | 2.500 | | 75 | 70-130 | 4 | 25 | |
| Tetrahydrofuran | 2.41 | 0.500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.9 | 25 | |
| Toluene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 1 | 25 | |
| trans-1,2-Dichloroethene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40243 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|---|----|--|
| trans-1,3-Dichloropropene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Trichloroethene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| Vinyl Acetate | 2.80 | 0.250 | mg/kg wet | 2.500 | | 112 | 70-130 | 5 | 25 | |
| Vinyl Chloride | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 4 | 25 | |
| Xylene O | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 2 | 25 | |
| Xylene P,M | 5.20 | 0.100 | mg/kg wet | 5.000 | | 104 | 70-130 | 2 | 25 | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.43 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.43 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.42 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.49 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |

Batch CF40332 - 5035

| Blank | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|-----|--------|--|--|---|
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0200 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.52 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.52 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.59 | | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.55 | | mg/kg wet | 2.500 | | 102 | 70-130 | | | |

LCS

| | | | | | | | | | | |
|---------------------------|------|-------|-----------|-------|--|----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.40 | 0.100 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
|---------------------------|------|-------|-----------|-------|--|----|--------|--|--|--|



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1-Trichloroethane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,1-Dichloroethane | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,1-Dichloroethene | 2.29 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,1-Dichloropropene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.37 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.31 | 0.300 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,2-Dibromoethane | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,2-Dichloroethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,2-Dichloropropane | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,3-Dichloropropane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,4-Dioxane - Screen | 54.0 | 5.00 | mg/kg wet | 50.00 | | 108 | 44-241 | | | |
| 1-Chlorohexane | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 2,2-Dichloropropane | 2.46 | 0.100 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 2-Butanone | 11.3 | 1.25 | mg/kg wet | 12.50 | | 90 | 70-130 | | | |
| 2-Chlorotoluene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 2-Hexanone | 11.2 | 0.500 | mg/kg wet | 12.50 | | 90 | 70-130 | | | |
| 4-Chlorotoluene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 4-Isopropyltoluene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.2 | 0.500 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| Acetone | 11.4 | 1.25 | mg/kg wet | 12.50 | | 91 | 70-130 | | | |
| Benzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Bromobenzene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Bromochloromethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Bromodichloromethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Bromoform | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Bromomethane | 2.44 | 0.100 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Carbon Disulfide | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| Carbon Tetrachloride | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Chlorobenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Chloroethane | 2.01 | 0.100 | mg/kg wet | 2.500 | | 80 | 70-130 | | | |
| Chloroform | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Chloromethane | 2.17 | 0.100 | mg/kg wet | 2.500 | | 87 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.73 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Dibromochloromethane | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Dibromomethane | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Dichlorodifluoromethane | 2.06 | 0.0500 | mg/kg wet | 2.500 | | 83 | 70-130 | | | |
| Diethyl Ether | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Di-isopropyl ether | 2.37 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Ethylbenzene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Hexachlorobutadiene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Isopropylbenzene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Methylene Chloride | 2.40 | 0.250 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Naphthalene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| n-Butylbenzene | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| n-Propylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| sec-Butylbenzene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Styrene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| tert-Butylbenzene | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Tetrachloroethene | 1.77 | 0.0500 | mg/kg wet | 2.500 | | 71 | 70-130 | | | |
| Tetrahydrofuran | 2.34 | 0.500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Toluene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Trichloroethene | 2.44 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Vinyl Acetate | 2.72 | 0.250 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Vinyl Chloride | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Xylene O | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Xylene P,M | 4.91 | 0.100 | mg/kg wet | 5.000 | | 98 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.36 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.34 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.35 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.41 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|------|----|--|
| 1,1,1,2-Tetrachloroethane | 2.43 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| 1,1,1-Trichloroethane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 1 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 0.4 | 25 | |
| 1,1,2-Trichloroethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.08 | 25 | |
| 1,1-Dichloroethane | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | 0.5 | 25 | |
| 1,1-Dichloroethene | 2.32 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | 1 | 25 | |
| 1,1-Dichloropropene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 2 | 25 | |
| 1,2,3-Trichlorobenzene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 4 | 25 | |
| 1,2,3-Trichloropropane | 2.28 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | 4 | 25 | |
| 1,2,4-Trichlorobenzene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.6 | 25 | |
| 1,2,4-Trimethylbenzene | 2.37 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.30 | 0.300 | mg/kg wet | 2.500 | | 92 | 70-130 | 0.5 | 25 | |
| 1,2-Dibromoethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.6 | 25 | |
| 1,2-Dichlorobenzene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|------|-----|--|
| 1,2-Dichloroethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| 1,2-Dichloropropane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 1 | 25 | |
| 1,3,5-Trimethylbenzene | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.5 | 25 | |
| 1,3-Dichlorobenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| 1,3-Dichloropropane | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 2 | 25 | |
| 1,4-Dichlorobenzene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.6 | 25 | |
| 1,4-Dioxane - Screen | 54.3 | 5.00 | mg/kg wet | 50.00 | | 109 | 44-241 | 0.5 | 200 | |
| 1-Chlorohexane | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| 2,2-Dichloropropane | 2.45 | 0.100 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.4 | 25 | |
| 2-Butanone | 10.9 | 1.25 | mg/kg wet | 12.50 | | 87 | 70-130 | 4 | 25 | |
| 2-Chlorotoluene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 10 | 25 | |
| 2-Hexanone | 10.9 | 0.500 | mg/kg wet | 12.50 | | 88 | 70-130 | 2 | 25 | |
| 4-Chlorotoluene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| 4-Isopropyltoluene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| 4-Methyl-2-Pentanone | 11.8 | 0.500 | mg/kg wet | 12.50 | | 94 | 70-130 | 3 | 25 | |
| Acetone | 10.9 | 1.25 | mg/kg wet | 12.50 | | 87 | 70-130 | 4 | 25 | |
| Benzene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 0.7 | 25 | |
| Bromobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |
| Bromochloromethane | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 3 | 25 | |
| Bromodichloromethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.2 | 25 | |
| Bromoform | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.2 | 25 | |
| Bromomethane | 2.68 | 0.100 | mg/kg wet | 2.500 | | 107 | 70-130 | 10 | 25 | |
| Carbon Disulfide | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 0.04 | 25 | |
| Carbon Tetrachloride | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.3 | 25 | |
| Chlorobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.8 | 25 | |
| Chloroethane | 2.07 | 0.100 | mg/kg wet | 2.500 | | 83 | 70-130 | 3 | 25 | |
| Chloroform | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 0.6 | 25 | |
| Chloromethane | 2.24 | 0.100 | mg/kg wet | 2.500 | | 90 | 70-130 | 3 | 25 | |
| cis-1,2-Dichloroethene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| cis-1,3-Dichloropropene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 4 | 25 | |
| Dibromochloromethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| Dibromomethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 1 | 25 | |
| Dichlorodifluoromethane | 2.05 | 0.0500 | mg/kg wet | 2.500 | | 82 | 70-130 | 0.6 | 25 | |
| Diethyl Ether | 2.28 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | 2 | 25 | |
| Di-isopropyl ether | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 2 | 25 | |
| Ethyl tertiary-butyl ether | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| Ethylbenzene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.7 | 25 | |
| Hexachlorobutadiene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 3 | 25 | |
| Isopropylbenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| Methyl tert-Butyl Ether | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 2 | 25 | |
| Methylene Chloride | 2.42 | 0.250 | mg/kg wet | 2.500 | | 97 | 70-130 | 0.7 | 25 | |
| Naphthalene | 2.37 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| n-Butylbenzene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 2 | 25 | |
| n-Propylbenzene | 2.31 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 6 | 25 | |
| sec-Butylbenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40332 - 5035

| | | | | | | | | | | |
|---|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| Styrene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 0.9 | 25 | |
| tert-Butylbenzene | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 1 | 25 | |
| Tertiary-amyl methyl ether | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 2 | 25 | |
| Tetrachloroethene | 1.77 | 0.0500 | mg/kg wet | 2.500 | | 71 | 70-130 | 0.1 | 25 | |
| Tetrahydrofuran | 2.29 | 0.500 | mg/kg wet | 2.500 | | 92 | 70-130 | 2 | 25 | |
| Toluene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.9 | 25 | |
| trans-1,2-Dichloroethene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 2 | 25 | |
| trans-1,3-Dichloropropene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| Trichloroethene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 1 | 25 | |
| Vinyl Acetate | 2.63 | 0.250 | mg/kg wet | 2.500 | | 105 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 2 | 25 | |
| Xylene O | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| Xylene P,M | 4.97 | 0.100 | mg/kg wet | 5.000 | | 99 | 70-130 | 1 | 25 | |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 2.35 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 2.31 | | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| <i>Surrogate: Dibromofluoromethane</i> | 2.34 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| <i>Surrogate: Toluene-d8</i> | 2.43 | | mg/kg wet | 2.500 | | 97 | 70-130 | | | |

8100M Total Petroleum Hydrocarbons

Batch CE43006 - 3546

| Blank | | | | | | | | | | |
|-------------------------------|------|------|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacotane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |
| <i>Surrogate: O-Terphenyl</i> | 4.55 | | mg/kg wet | 5.000 | | 91 | 40-140 | | | |

| LCS | | | | | | | | | | |
|------------------|-----|-----|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 79 | 40-140 | | | |
| Docosane (C22) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | | | |
| Dodecane (C12) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |
| Eicosane (C20) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | | | |
| Hexacosane (C26) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | | | |
| Hexadecane (C16) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |
| Nonadecane (C19) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8100M Total Petroleum Hydrocarbons

Batch CE43006 - 3546

| | | | | | | | | | | |
|-------------------------------|-------------|------|-----------|--------------|--|-----------|---------------|--|--|--|
| Nonane (C9) | 1.8 | 0.2 | mg/kg wet | 2.500 | | 74 | 30-140 | | | |
| Octacosane (C28) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Octadecane (C18) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | | | |
| Tetracosane (C24) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | | | |
| Tetradecane (C14) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 33.7 | 37.5 | mg/kg wet | 35.00 | | 96 | 40-140 | | | |
| Triacontane (C30) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 75 | 40-140 | | | |
| <i>Surrogate: O-Terphenyl</i> | <i>4.90</i> | | mg/kg wet | <i>5.000</i> | | <i>98</i> | <i>40-140</i> | | | |

LCS Dup

| | | | | | | | | | | |
|-------------------------------|-------------|------|-----------|--------------|--|-----------|---------------|------|----|--|
| Decane (C10) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 80 | 40-140 | 0.4 | 25 | |
| Docosane (C22) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | 1 | 25 | |
| Dodecane (C12) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 76 | 40-140 | 16 | 25 | |
| Eicosane (C20) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | 0.2 | 25 | |
| Hexacosane (C26) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | 0.3 | 25 | |
| Hexadecane (C16) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | 1 | 25 | |
| Nonadecane (C19) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | 3 | 25 | |
| Nonane (C9) | 1.8 | 0.2 | mg/kg wet | 2.500 | | 73 | 30-140 | 0.3 | 25 | |
| Octacosane (C28) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | 0.2 | 25 | |
| Octadecane (C18) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 93 | 40-140 | 0.9 | 25 | |
| Tetracosane (C24) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 96 | 40-140 | 0.1 | 25 | |
| Tetradecane (C14) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | 2 | 25 | |
| Total Petroleum Hydrocarbons | 33.7 | 37.5 | mg/kg wet | 35.00 | | 96 | 40-140 | 0.07 | 25 | |
| Triacontane (C30) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 76 | 40-140 | 0.3 | 25 | |
| <i>Surrogate: O-Terphenyl</i> | <i>4.79</i> | | mg/kg wet | <i>5.000</i> | | <i>96</i> | <i>40-140</i> | | | |

8270C Polynuclear Aromatic Hydrocarbons

Batch CE43005 - 3546

Blank

| | | | | | | | | | | |
|------------------------|----|-------|-----------|--|--|--|--|--|--|--|
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)pyrene | ND | 0.167 | mg/kg wet | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Chrysene | ND | 0.167 | mg/kg wet | | | | | | | |
| Dibenzo(a,h)Anthracene | ND | 0.167 | mg/kg wet | | | | | | | |
| Fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Fluorene | ND | 0.333 | mg/kg wet | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.333 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE43005 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| Phenanthrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 3.07 | | mg/kg wet | 3.333 | | 92 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.23 | | mg/kg wet | 3.333 | | 97 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.70 | | mg/kg wet | 3.333 | | 81 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.76 | | mg/kg wet | 3.333 | | 113 | 30-130 | | | |

LCS

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | 2.86 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Acenaphthene | 2.87 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Acenaphthylene | 2.92 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | | | |
| Anthracene | 2.98 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | | | |
| Benzo(a)anthracene | 3.02 | 0.333 | mg/kg wet | 3.333 | | 91 | 40-140 | | | |
| Benzo(a)pyrene | 2.88 | 0.167 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Benzo(b)fluoranthene | 3.24 | 0.333 | mg/kg wet | 3.333 | | 97 | 40-140 | | | |
| Benzo(g,h,i)perylene | 3.35 | 0.333 | mg/kg wet | 3.333 | | 101 | 40-140 | | | |
| Benzo(k)fluoranthene | 2.76 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | | | |
| Chrysene | 2.91 | 0.167 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Dibenzo(a,h)Anthracene | 3.42 | 0.167 | mg/kg wet | 3.333 | | 103 | 40-140 | | | |
| Fluoranthene | 3.28 | 0.333 | mg/kg wet | 3.333 | | 98 | 40-140 | | | |
| Fluorene | 2.98 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | | | |
| Indeno(1,2,3-cd)Pyrene | 3.42 | 0.333 | mg/kg wet | 3.333 | | 103 | 40-140 | | | |
| Naphthalene | 2.85 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Phenanthrene | 2.96 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | | | |
| Pyrene | 2.91 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.74 | | mg/kg wet | 3.333 | | 82 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.05 | | mg/kg wet | 3.333 | | 92 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.54 | | mg/kg wet | 3.333 | | 76 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.14 | | mg/kg wet | 3.333 | | 94 | 30-130 | | | |

LCS Dup

| | | | | | | | | | | |
|------------------------|------|-------|-----------|-------|--|-----|--------|-----|----|--|
| 2-Methylnaphthalene | 2.89 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | 0.8 | 30 | |
| Acenaphthene | 2.85 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 0.8 | 30 | |
| Acenaphthylene | 2.87 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 2 | 30 | |
| Anthracene | 2.96 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | 0.9 | 30 | |
| Benzo(a)anthracene | 3.04 | 0.333 | mg/kg wet | 3.333 | | 91 | 40-140 | 0.5 | 30 | |
| Benzo(a)pyrene | 2.96 | 0.167 | mg/kg wet | 3.333 | | 89 | 40-140 | 3 | 30 | |
| Benzo(b)fluoranthene | 3.32 | 0.333 | mg/kg wet | 3.333 | | 100 | 40-140 | 3 | 30 | |
| Benzo(g,h,i)perylene | 3.45 | 0.333 | mg/kg wet | 3.333 | | 103 | 40-140 | 3 | 30 | |
| Benzo(k)fluoranthene | 2.83 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | 2 | 30 | |
| Chrysene | 2.90 | 0.167 | mg/kg wet | 3.333 | | 87 | 40-140 | 0.3 | 30 | |
| Dibenzo(a,h)Anthracene | 3.54 | 0.167 | mg/kg wet | 3.333 | | 106 | 40-140 | 4 | 30 | |
| Fluoranthene | 3.18 | 0.333 | mg/kg wet | 3.333 | | 95 | 40-140 | 3 | 30 | |
| Fluorene | 2.88 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 3 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 3.53 | 0.333 | mg/kg wet | 3.333 | | 106 | 40-140 | 3 | 30 | |
| Naphthalene | 2.81 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | 2 | 30 | |
| Phenanthrene | 2.97 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | 0.2 | 30 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CE43005 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|----|--------|---|----|--|
| Pyrene | 2.87 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | 1 | 30 | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.63 | | mg/kg wet | 3.333 | | 79 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 3.01 | | mg/kg wet | 3.333 | | 90 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.43 | | mg/kg wet | 3.333 | | 73 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.01 | | mg/kg wet | 3.333 | | 90 | 30-130 | | | |

Classical Chemistry

Batch CE43102 - TCN Prep

| | | | | | | | | | | |
|------------------|------|------|-----------|-------|--|-----|--------|--|--|--|
| Blank | | | | | | | | | | |
| Total Cyanide | ND | 1.00 | mg/kg wet | | | | | | | |
| LCS | | | | | | | | | | |
| Total Cyanide | 5.04 | 1.00 | mg/kg wet | 5.015 | | 100 | 90-110 | | | |
| Reference | | | | | | | | | | |
| Total Cyanide | 112 | 4.88 | mg/kg wet | 101.0 | | 111 | 31-168 | | | |
| Reference | | | | | | | | | | |
| Total Cyanide | 108 | 4.70 | mg/kg wet | 101.0 | | 107 | 31-168 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

Notes and Definitions

- U Analyte included in the analysis, but not detected
- SM Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).
- J Reported between MDL and MRL
- D Diluted.
- B Present in Method Blank (B).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1405669

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 14050669
Date Project Due: 6/6/14
Days For Project: 5 Day

Items to be checked upon receipt:

- | | | | |
|--|-------------------------------|---|---|
| 1. Air Bill Manifest Present? | <input type="checkbox"/> * No | 10. Are the samples properly preserved? | <input type="checkbox"/> Yes |
| Air No.: | | 11. Proper sample containers used? | <input type="checkbox"/> Yes |
| 2. Were Custody Seals Present? | <input type="checkbox"/> No | 12. Any air bubbles in the VOA vials? | <input type="checkbox"/> N/A |
| 3. Were Custody Seals Intact? | <input type="checkbox"/> N/A | 13. Holding times exceeded? | <input type="checkbox"/> No |
| 4. Is Radiation count < 100 CPM? | <input type="checkbox"/> Yes | 14. Sufficient sample volumes? | <input type="checkbox"/> Yes |
| 5. Is a cooler present? | <input type="checkbox"/> Yes | 15. Any Subcontracting needed? | <input type="checkbox"/> No |
| <u>Cooler Temp: 3.5</u> | | 16. Are ESS labels on correct containers? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| <u>Iced With: Ice</u> | | 17. Were samples received intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Was COC included with samples? | <input type="checkbox"/> Yes | ESS Sample IDs: _____ | |
| 7. Was COC signed and dated by client? | <input type="checkbox"/> Yes | Sub Lab: _____ | |
| 8. Does the COC match the sample | <input type="checkbox"/> Yes | Analysis: _____ | |
| 9. Is COC complete and correct? | <input type="checkbox"/> Yes | TAT: _____ | |
18. Was there need to call project manager to discuss status? If yes, please explain.

Relog of Samples 1405591 - 05, - 08, - 09

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 8 oz Soil Jar | 1 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 8 oz Soil Jar | 1 | NP |
| 3 | Yes | 40 ml - VOA | 1 | MeOH |

Completed By: [Signature]
Reviewed By: [Signature]

Date/Time: 5/30/14 12:40
Date/Time: 5/30/14 1246

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

1405609
 Page 1 of 1

| | | |
|--|--|-------------------------------|
| Turn Time <input checked="" type="checkbox"/> Standard Other _____ If faster than 5 days, prior approval by laboratory is required # _____ | Reporting Limits RI00M P00L | ESS LAB PROJECT ID 1405591 |
| State where samples were collected from: MA <input checked="" type="checkbox"/> RI <input checked="" type="checkbox"/> CT NH NJ NY ME Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ | WB 5/30/14 12:35 |
| Is this project for any of the following: MA-MCP Navy USACE Other _____ | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ | |

| Co. Name | | Project # | | Project Name (20 Char. or less) | | Write Required Analysis | | | | | | | | | | | | | | | | | | | |
|---------------------|--------------------|------------------|-------------|---------------------------------|-------------|--|---------------|----------------------|--------------------|-------------|-------------|--------------|---------------|-------------|-------------|--|--|--|--|--|--|--|--|--|--|
| GZA | | 33554 | | 642 ALLENS AVENUE | | | | | | | | | | | | | | | | | | | | | |
| Contact Person | | Address | | City | | State | | Zip | | PO# | | | | | | | | | | | | | | | |
| MARGARET KILPATRICK | | 530 BROADWAY | | PROVIDENCE RI | | RI | | 02909 | | | | | | | | | | | | | | | | | |
| Telephone # | | Fax # | | Email Address | | | | | | | | | | | | | | | | | | | | | |
| 401-421-4140 | | | | mkilpatrick@gza.com | | | | | | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | CONIP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | Vol's | PANs | PE-13 METALS | TOTAL CHAN102 | TRI | BI00 M | | | | | | | | | | |
| 1 | 5/27/14 | 10:30 | | | | GZ-3140 S-1 | 16 | 2 | X | | | | | | | | | | | | | | | | |
| 2 | 11:40 | | | | | GZ-3140 S-2 | | | | | | | | | | | | | | | | | | | |
| 3 | 12:10 | | | | | GZ-3140 S-1 | | | | | | | | | | | | | | | | | | | |
| 4 | 12:20 | | | | | GZ-3140 S-2 | | | | | | | | | | | | | | | | | | | |
| 5 | 12:30 | | | | | GZ-3140 S-3 | | | | | | | | | | | | | | | | | | | |
| 6 | 1:00 | | | | | GZ-3140 S-1 | | | | | | | | | | | | | | | | | | | |
| 7 | 1:10 | | | | | GZ-3140 S-2 | | | | | | | | | | | | | | | | | | | |
| 8 | 1:20 | | | | | GZ-3140 S-3 | | | | | | | | | | | | | | | | | | | |
| 9 | 8:00 | | | | | TRIP BLANK - 052714 | G | 1 | ✓ | X | | | | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | | |
|---|--|--|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Internal Use Only <input type="checkbox"/> | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No NA: <input checked="" type="checkbox"/> [] Pickup | | Sampled by: SOPHIA NARCIWICZ + WILLIAM FORTUNE * client request off |
| Cooler Temp: 3.5° ice 5/27/14 | [] Technicians _____ | Comments: HOLD ALL SAMPLES, NEG10 PANs APPLY hold on 5/30/14 cont |

| | | | | | | | |
|---|------------------------|---|------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <i>[Signature]</i> | Date/Time 5/27/14 1600 | Received by: (Signature) <i>[Signature]</i> | Date/Time 5/27/14 1600 | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

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CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554)
ESS Laboratory Work Order Number: 1406074

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 11:24 am, Jun 13, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

SAMPLE RECEIPT

The following samples were received on June 04, 2014 for the analyses specified on the enclosed Chain of Custody Record.

These samples were originally received on hold on May 28, 2014.

| <u>Lab Number</u> | <u>Sample Name</u> | <u>Matrix</u> | <u>Analysis</u> |
|-------------------|--------------------|---------------|---|
| 1406074-01 | GZ-315D S-3 | Soil | 6010B, 7471A, 7740, 7841, 8100M, 8260B, 8270C, 9014 |
| 1406074-02 | GZ-310D S-2 | Soil | 6010B, 7471A, 7740, 7841, 8100M, 8260B, 8270C, 9014 |
| 1406074-03 | GZ-320D S-3 | Soil | 6010B, 7471A, 7740, 7841, 8100M, 8260B, 8270C, 9014 |
| 1406074-04 | BD-052814 | Soil | 6010B, 7471A, 7740, 7841, 8100M, 8260B, 8270C, 9014 |
| 1406074-05 | Trip Blank-52814 | Soil | 8260B |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

- 1406074-01 [Present in Method Blank \(B\).](#)
Chloroform
- 1406074-03 [Present in Method Blank \(B\).](#)
Chloroform
- 1406074-04 [Present in Method Blank \(B\).](#)
Chloroform
- 1406074-05 [Present in Method Blank \(B\).](#)
Chloroform
- CF41114-BSD1 [Blank Spike recovery is above upper control limit \(B+\).](#)
Acetone (132% @ 70-130%)

8100M Total Petroleum Hydrocarbons

- CXF0043-CCV2 [Continuing Calibration recovery is above upper control limit \(C+\).](#)
Triacotane (C30) (122% @ 80-120%)

8270C Polynuclear Aromatic Hydrocarbons

- 1406074-01 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)

Total Metals Solid

- CF40906-BS1 [Blank Spike recovery is below lower control limit \(B-\).](#)
Antimony (57% @ 80-120%)
- CF40906-BSD1 [Blank Spike recovery is below lower control limit \(B-\).](#)
Beryllium (66% @ 80-120%), Lead (74% @ 80-120%), Zinc (75% @ 80-120%)
- CF40906-BSD1 [Relative percent difference for duplicate is outside of criteria \(D+\).](#)
Antimony (35%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-315D S-3
Date Sampled: 05/28/14 09:50
Percent Solids: 86

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | 8.7 (4.7) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |
| Arsenic | 15.0 (2.3) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |
| Beryllium | 0.35 (0.10) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |
| Cadmium | ND (0.47) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |
| Chromium | 8.7 (0.9) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |
| Copper | 30.9 (2.3) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |
| Lead | 299 (4.7) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |
| Mercury | 0.451 (0.034) | | 7471A | | 1 | JP | 06/05/14 14:46 | 0.68 | 40 | CF40502 |
| Nickel | 11.3 (2.3) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |
| Selenium | ND (2.35) | | 7740 | | 5 | KJK | 06/12/14 4:38 | 2.49 | 100 | CF40906 |
| Silver | ND (0.47) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |
| Thallium | ND (1.16) | | 7841 | | 5 | KJK | 06/12/14 0:11 | 2.49 | 100 | CF40906 |
| Zinc | 46.4 (2.3) | | 6010B | | 1 | ICP | 06/10/14 23:44 | 2.49 | 100 | CF40906 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-315D S-3
Date Sampled: 05/28/14 09:50
Percent Solids: 86
Initial Volume: 25.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0837) | 0.0073 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,1,1-Trichloroethane | ND (0.0419) | 0.0074 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,1,2,2-Tetrachloroethane | ND (0.0419) | 0.0114 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,1,2-Trichloroethane | ND (0.0419) | 0.0105 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,1-Dichloroethane | ND (0.0419) | 0.0067 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,1-Dichloroethene | ND (0.0419) | 0.0103 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,1-Dichloropropene | ND (0.0419) | 0.0064 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,2,3-Trichlorobenzene | ND (0.0419) | 0.0140 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,2,3-Trichloropropane | ND (0.0419) | 0.0104 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,2,4-Trichlorobenzene | ND (0.0419) | 0.0092 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,2,4-Trimethylbenzene | J 0.0368 (0.0419) | 0.0080 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,2-Dibromo-3-Chloropropane | ND (0.251) | 0.0837 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,2-Dibromoethane | ND (0.0419) | 0.0106 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,2-Dichlorobenzene | ND (0.0419) | 0.0059 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,2-Dichloroethane | ND (0.0419) | 0.0112 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,2-Dichloropropane | ND (0.0419) | 0.0110 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,3,5-Trimethylbenzene | J 0.0352 (0.0419) | 0.0074 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,3-Dichlorobenzene | ND (0.0419) | 0.0053 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,3-Dichloropropane | ND (0.0419) | 0.0094 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,4-Dichlorobenzene | ND (0.0419) | 0.0111 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1,4-Dioxane - Screen | ND (4.19) | 1.40 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 1-Chlorohexane | ND (0.0419) | 0.0080 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 2,2-Dichloropropane | ND (0.0837) | 0.0143 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 2-Butanone | ND (1.05) | 0.242 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 2-Chlorotoluene | ND (0.0419) | 0.0118 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 2-Hexanone | ND (0.419) | 0.0721 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 4-Chlorotoluene | ND (0.0419) | 0.0054 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 4-Isopropyltoluene | ND (0.0419) | 0.0075 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| 4-Methyl-2-Pentanone | ND (0.419) | 0.0504 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Acetone | ND (1.05) | 0.310 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Benzene | 0.0477 (0.0419) | 0.0068 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Bromobenzene | ND (0.0419) | 0.0115 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-315D S-3
Date Sampled: 05/28/14 09:50
Percent Solids: 86
Initial Volume: 25.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0419) | 0.0136 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Bromodichloromethane | ND (0.0419) | 0.0058 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Bromoform | ND (0.0419) | 0.0121 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Bromomethane | ND (0.0837) | 0.0280 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Carbon Disulfide | ND (0.0419) | 0.0062 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Carbon Tetrachloride | ND (0.0419) | 0.0073 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Chlorobenzene | ND (0.0419) | 0.0066 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Chloroethane | ND (0.0837) | 0.0279 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Chloroform | B, J 0.0159 (0.0419) | 0.0086 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Chloromethane | ND (0.0837) | 0.0106 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| cis-1,2-Dichloroethene | ND (0.0419) | 0.0104 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| cis-1,3-Dichloropropene | ND (0.0419) | 0.0095 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Dibromochloromethane | ND (0.0419) | 0.0106 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Dibromomethane | ND (0.0419) | 0.0132 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Dichlorodifluoromethane | ND (0.0419) | 0.0073 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Diethyl Ether | ND (0.0419) | 0.0106 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Di-isopropyl ether | ND (0.0419) | 0.0079 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Ethyl tertiary-butyl ether | ND (0.0419) | 0.0106 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Ethylbenzene | J 0.0100 (0.0419) | 0.0054 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Hexachlorobutadiene | ND (0.0419) | 0.0140 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Isopropylbenzene | ND (0.0419) | 0.0074 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Methyl tert-Butyl Ether | ND (0.0419) | 0.0067 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Methylene Chloride | ND (0.209) | 0.0110 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Naphthalene | 0.868 (0.0419) | 0.0110 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| n-Butylbenzene | ND (0.0419) | 0.0103 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| n-Propylbenzene | ND (0.0419) | 0.0102 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| sec-Butylbenzene | ND (0.0419) | 0.0056 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Styrene | J 0.0410 (0.0419) | 0.0055 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| tert-Butylbenzene | ND (0.0419) | 0.0098 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Tertiary-amyl methyl ether | ND (0.0419) | 0.0060 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Tetrachloroethene | ND (0.0419) | 0.0140 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Tetrahydrofuran | ND (0.419) | 0.108 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-315D S-3
Date Sampled: 05/28/14 09:50
Percent Solids: 86
Initial Volume: 25.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | 0.134 (0.0419) | 0.0106 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| trans-1,2-Dichloroethene | ND (0.0419) | 0.0137 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| trans-1,3-Dichloropropene | ND (0.0419) | 0.0129 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Trichloroethene | ND (0.0419) | 0.0086 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Trichlorofluoromethane | ND (0.0419) | 0.0111 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Vinyl Acetate | ND (0.209) | 0.0086 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Vinyl Chloride | ND (0.0419) | 0.0138 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Xylene O | J 0.0285 (0.0419) | 0.0080 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Xylene P,M | 0.111 (0.0837) | 0.0162 | 8260B | | 1 | 06/09/14 15:28 | CXF0122 | CF40934 |
| Xylenes (Total) | 0.139 (0.0837) | | 8260B | | 1 | 06/09/14 15:28 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 105 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 103 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 114 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 107 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-315D S-3
Date Sampled: 05/28/14 09:50
Percent Solids: 86
Initial Volume: 19.7
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 6/4/14 15:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 6310 (177) | | 8100M | | 4 | 06/05/14 5:05 | CXF0043 | CF40311 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 97 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-315D S-3
Date Sampled: 05/28/14 09:50
Percent Solids: 86
Initial Volume: 14.3
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 6/4/14 17:26

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | 10.5 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Acenaphthene | ND (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Acenaphthylene | 55.2 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Anthracene | 15.2 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Benzo(a)anthracene | 22.3 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Benzo(a)pyrene | 43.3 (2.04) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Benzo(b)fluoranthene | 57.6 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Benzo(g,h,i)perylene | 20.1 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Benzo(k)fluoranthene | 22.7 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Chrysene | 28.0 (2.04) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Dibenzo(a,h)Anthracene | 6.37 (2.04) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Fluoranthene | 26.9 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Fluorene | 6.32 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Indeno(1,2,3-cd)Pyrene | 17.7 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Naphthalene | 17.2 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Phenanthrene | 21.0 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |
| Pyrene | 51.7 (4.06) | | 8270C | | 5 | 06/05/14 23:15 | CXF0065 | CF40426 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|-----------------------------------|------------------|------------------|---------------|
| Surrogate: 1,2-Dichlorobenzene-d4 | 69 % | | 30-130 |
| Surrogate: 2-Fluorobiphenyl | 77 % | | 30-130 |
| Surrogate: Nitrobenzene-d5 | 73 % | | 30-130 |
| Surrogate: p-Terphenyl-d14 | 67 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-315D S-3
Date Sampled: 05/28/14 09:50
Percent Solids: 86

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-01
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | 52.3 (5.37) | | 9014 | | 5 | MJV | 06/06/14 12:40 | mg/kg dry | CF40619 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-310D S-2
Date Sampled: 05/28/14 11:20
Percent Solids: 82

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (5.0) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |
| Arsenic | 11.7 (2.5) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |
| Beryllium | 0.30 (0.11) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |
| Cadmium | ND (0.51) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |
| Chromium | 7.4 (1.0) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |
| Copper | 30.6 (2.5) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |
| Lead | 79.3 (5.0) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |
| Mercury | 0.753 (0.170) | | 7471A | | 5 | JP | 06/05/14 16:41 | 0.71 | 40 | CF40502 |
| Nickel | 9.5 (2.5) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |
| Selenium | ND (2.53) | | 7740 | | 5 | KJK | 06/12/14 5:26 | 2.42 | 100 | CF40906 |
| Silver | ND (0.51) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |
| Thallium | ND (1.24) | | 7841 | | 5 | KJK | 06/12/14 19:20 | 2.42 | 100 | CF40906 |
| Zinc | 128 (2.5) | | 6010B | | 1 | ICP | 06/11/14 0:04 | 2.42 | 100 | CF40906 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: GZ-310D S-2
 Date Sampled: 05/28/14 11:20
 Percent Solids: 82
 Initial Volume: 26.9
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1406074
 ESS Laboratory Sample ID: 1406074-02
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0894) | 0.0078 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,1,1-Trichloroethane | ND (0.0447) | 0.0079 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,1,2,2-Tetrachloroethane | ND (0.0447) | 0.0122 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,1,2-Trichloroethane | ND (0.0447) | 0.0112 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,1-Dichloroethane | ND (0.0447) | 0.0072 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,1-Dichloroethene | ND (0.0447) | 0.0110 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,1-Dichloropropene | ND (0.0447) | 0.0069 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,2,3-Trichlorobenzene | ND (0.0447) | 0.0149 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,2,3-Trichloropropane | ND (0.0447) | 0.0111 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,2,4-Trichlorobenzene | ND (0.0447) | 0.0098 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,2,4-Trimethylbenzene | J 0.0134 (0.0447) | 0.0086 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,2-Dibromo-3-Chloropropane | ND (0.268) | 0.0894 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,2-Dibromoethane | ND (0.0447) | 0.0114 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,2-Dichlorobenzene | ND (0.0447) | 0.0063 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,2-Dichloroethane | ND (0.0447) | 0.0120 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,2-Dichloropropane | ND (0.0447) | 0.0117 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,3,5-Trimethylbenzene | ND (0.0447) | 0.0079 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,3-Dichlorobenzene | ND (0.0447) | 0.0056 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,3-Dichloropropane | ND (0.0447) | 0.0100 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,4-Dichlorobenzene | ND (0.0447) | 0.0119 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1,4-Dioxane - Screen | ND (4.47) | 1.49 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 1-Chlorohexane | ND (0.0447) | 0.0085 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 2,2-Dichloropropane | ND (0.0894) | 0.0153 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 2-Butanone | ND (1.12) | 0.258 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 2-Chlorotoluene | ND (0.0447) | 0.0126 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 2-Hexanone | ND (0.447) | 0.0770 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 4-Chlorotoluene | ND (0.0447) | 0.0058 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 4-Isopropyltoluene | ND (0.0447) | 0.0080 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| 4-Methyl-2-Pentanone | ND (0.447) | 0.0538 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Acetone | ND (1.12) | 0.331 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Benzene | J 0.0080 (0.0447) | 0.0072 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Bromobenzene | ND (0.0447) | 0.0123 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-310D S-2
Date Sampled: 05/28/14 11:20
Percent Solids: 82
Initial Volume: 26.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0447) | 0.0145 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Bromodichloromethane | ND (0.0447) | 0.0062 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Bromoform | ND (0.0447) | 0.0129 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Bromomethane | ND (0.0894) | 0.0299 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Carbon Disulfide | ND (0.0447) | 0.0066 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Carbon Tetrachloride | ND (0.0447) | 0.0078 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Chlorobenzene | ND (0.0447) | 0.0071 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Chloroethane | ND (0.0894) | 0.0298 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Chloroform | ND (0.0447) | 0.0092 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Chloromethane | ND (0.0894) | 0.0114 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| cis-1,2-Dichloroethene | ND (0.0447) | 0.0111 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| cis-1,3-Dichloropropene | ND (0.0447) | 0.0101 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Dibromochloromethane | ND (0.0447) | 0.0113 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Dibromomethane | ND (0.0447) | 0.0141 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Dichlorodifluoromethane | ND (0.0447) | 0.0078 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Diethyl Ether | ND (0.0447) | 0.0114 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Di-isopropyl ether | ND (0.0447) | 0.0084 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Ethyl tertiary-butyl ether | ND (0.0447) | 0.0113 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Ethylbenzene | 0.0519 (0.0447) | 0.0058 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Hexachlorobutadiene | ND (0.0447) | 0.0149 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Isopropylbenzene | ND (0.0447) | 0.0079 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Methyl tert-Butyl Ether | ND (0.0447) | 0.0072 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Methylene Chloride | ND (0.224) | 0.0117 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Naphthalene | 0.218 (0.0447) | 0.0117 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| n-Butylbenzene | ND (0.0447) | 0.0110 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| n-Propylbenzene | ND (0.0447) | 0.0109 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| sec-Butylbenzene | ND (0.0447) | 0.0060 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Styrene | J 0.0089 (0.0447) | 0.0059 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| tert-Butylbenzene | ND (0.0447) | 0.0105 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Tertiary-amyl methyl ether | ND (0.0447) | 0.0064 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Tetrachloroethene | ND (0.0447) | 0.0149 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Tetrahydrofuran | ND (0.447) | 0.115 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-310D S-2
Date Sampled: 05/28/14 11:20
Percent Solids: 82
Initial Volume: 26.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0447) | 0.0114 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| trans-1,2-Dichloroethene | ND (0.0447) | 0.0147 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| trans-1,3-Dichloropropene | ND (0.0447) | 0.0138 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Trichloroethene | ND (0.0447) | 0.0092 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Trichlorofluoromethane | ND (0.0447) | 0.0118 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Vinyl Acetate | ND (0.224) | 0.0092 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Vinyl Chloride | ND (0.0447) | 0.0148 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Xylene O | ND (0.0447) | 0.0086 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Xylene P,M | ND (0.0894) | 0.0173 | 8260B | | 1 | 06/10/14 13:42 | CXF0140 | CF41114 |
| Xylenes (Total) | ND (0.0894) | | 8260B | | 1 | 06/10/14 13:42 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>105 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>107 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>114 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>110 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-310D S-2
Date Sampled: 05/28/14 11:20
Percent Solids: 82
Initial Volume: 19.2
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 6/4/14 15:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 553 (47.5) | | 8100M | | 1 | 06/05/14 4:26 | CXF0043 | CF40311 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | 97 % | | 40-140 | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-310D S-2
Date Sampled: 05/28/14 11:20
Percent Solids: 82
Initial Volume: 14.8
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 6/5/14 9:16

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | 0.576 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Acenaphthene | ND (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Acenaphthylene | 0.926 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Anthracene | ND (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Benzo(a)anthracene | 1.23 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Benzo(a)pyrene | 1.54 (0.206) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Benzo(b)fluoranthene | 2.36 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Benzo(g,h,i)perylene | 1.00 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Benzo(k)fluoranthene | 1.03 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Chrysene | 1.46 (0.206) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Dibenzo(a,h)Anthracene | 0.279 (0.206) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Fluoranthene | 1.59 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Fluorene | ND (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Indeno(1,2,3-cd)Pyrene | 0.903 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Naphthalene | 2.33 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Phenanthrene | 0.754 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |
| Pyrene | 1.29 (0.410) | | 8270C | | 1 | 06/05/14 16:15 | CXF0065 | CF40426 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|-----------------------------------|------------------|------------------|---------------|
| Surrogate: 1,2-Dichlorobenzene-d4 | 63 % | | 30-130 |
| Surrogate: 2-Fluorobiphenyl | 74 % | | 30-130 |
| Surrogate: Nitrobenzene-d5 | 68 % | | 30-130 |
| Surrogate: p-Terphenyl-d14 | 69 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-310D S-2
Date Sampled: 05/28/14 11:20
Percent Solids: 82

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-02
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | 52.6 (5.36) | | 9014 | | 5 | MJV | 06/06/14 12:40 | mg/kg dry | CF40619 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-320D S-3
Date Sampled: 05/28/14 13:45
Percent Solids: 86

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.6) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |
| Arsenic | 4.4 (2.3) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |
| Beryllium | 0.22 (0.10) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |
| Cadmium | ND (0.46) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |
| Chromium | 4.9 (0.9) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |
| Copper | 15.3 (2.3) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |
| Lead | 34.2 (4.6) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |
| Mercury | ND (0.034) | | 7471A | | 1 | JP | 06/05/14 15:08 | 0.67 | 40 | CF40502 |
| Nickel | 7.9 (2.3) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |
| Selenium | ND (2.32) | | 7740 | | 5 | KJK | 06/12/14 5:32 | 2.5 | 100 | CF40906 |
| Silver | ND (0.46) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |
| Thallium | ND (1.14) | | 7841 | | 5 | KJK | 06/12/14 19:25 | 2.5 | 100 | CF40906 |
| Zinc | 24.8 (2.3) | | 6010B | | 1 | ICP | 06/11/14 0:21 | 2.5 | 100 | CF40906 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-320D S-3
Date Sampled: 05/28/14 13:45
Percent Solids: 86
Initial Volume: 25.5
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0837) | 0.0073 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,1,1-Trichloroethane | ND (0.0418) | 0.0074 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,1,2,2-Tetrachloroethane | ND (0.0418) | 0.0114 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,1,2-Trichloroethane | ND (0.0418) | 0.0105 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,1-Dichloroethane | ND (0.0418) | 0.0067 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,1-Dichloroethene | ND (0.0418) | 0.0103 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,1-Dichloropropene | ND (0.0418) | 0.0064 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,2,3-Trichlorobenzene | ND (0.0418) | 0.0140 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,2,3-Trichloropropane | ND (0.0418) | 0.0104 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,2,4-Trichlorobenzene | ND (0.0418) | 0.0092 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,2,4-Trimethylbenzene | ND (0.0418) | 0.0080 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,2-Dibromo-3-Chloropropane | ND (0.251) | 0.0837 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,2-Dibromoethane | ND (0.0418) | 0.0106 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,2-Dichlorobenzene | ND (0.0418) | 0.0059 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,2-Dichloroethane | ND (0.0418) | 0.0112 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,2-Dichloropropane | ND (0.0418) | 0.0110 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,3,5-Trimethylbenzene | ND (0.0418) | 0.0074 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,3-Dichlorobenzene | ND (0.0418) | 0.0053 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,3-Dichloropropane | ND (0.0418) | 0.0094 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,4-Dichlorobenzene | ND (0.0418) | 0.0111 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1,4-Dioxane - Screen | ND (4.18) | 1.40 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 1-Chlorohexane | ND (0.0418) | 0.0079 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 2,2-Dichloropropane | ND (0.0837) | 0.0143 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 2-Butanone | ND (1.05) | 0.242 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 2-Chlorotoluene | ND (0.0418) | 0.0118 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 2-Hexanone | ND (0.418) | 0.0720 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 4-Chlorotoluene | ND (0.0418) | 0.0054 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 4-Isopropyltoluene | ND (0.0418) | 0.0074 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| 4-Methyl-2-Pentanone | ND (0.418) | 0.0504 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Acetone | ND (1.05) | 0.310 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Benzene | 0.0519 (0.0418) | 0.0068 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Bromobenzene | ND (0.0418) | 0.0115 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-320D S-3
Date Sampled: 05/28/14 13:45
Percent Solids: 86
Initial Volume: 25.5
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0418) | 0.0136 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Bromodichloromethane | ND (0.0418) | 0.0058 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Bromoform | ND (0.0418) | 0.0120 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Bromomethane | ND (0.0837) | 0.0279 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Carbon Disulfide | ND (0.0418) | 0.0062 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Carbon Tetrachloride | ND (0.0418) | 0.0073 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Chlorobenzene | ND (0.0418) | 0.0066 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Chloroethane | ND (0.0837) | 0.0279 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Chloroform | B, J 0.0142 (0.0418) | 0.0086 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Chloromethane | ND (0.0837) | 0.0106 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| cis-1,2-Dichloroethene | ND (0.0418) | 0.0104 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| cis-1,3-Dichloropropene | ND (0.0418) | 0.0095 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Dibromochloromethane | ND (0.0418) | 0.0105 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Dibromomethane | ND (0.0418) | 0.0132 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Dichlorodifluoromethane | ND (0.0418) | 0.0073 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Diethyl Ether | ND (0.0418) | 0.0106 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Di-isopropyl ether | ND (0.0418) | 0.0079 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Ethyl tertiary-butyl ether | ND (0.0418) | 0.0105 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Ethylbenzene | ND (0.0418) | 0.0054 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Hexachlorobutadiene | ND (0.0418) | 0.0140 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Isopropylbenzene | ND (0.0418) | 0.0074 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Methyl tert-Butyl Ether | ND (0.0418) | 0.0067 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Methylene Chloride | ND (0.209) | 0.0110 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Naphthalene | J 0.0268 (0.0418) | 0.0110 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| n-Butylbenzene | ND (0.0418) | 0.0103 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| n-Propylbenzene | ND (0.0418) | 0.0102 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| sec-Butylbenzene | ND (0.0418) | 0.0056 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Styrene | ND (0.0418) | 0.0055 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| tert-Butylbenzene | ND (0.0418) | 0.0098 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Tertiary-amyl methyl ether | ND (0.0418) | 0.0060 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Tetrachloroethene | ND (0.0418) | 0.0140 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Tetrahydrofuran | ND (0.418) | 0.108 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-320D S-3
Date Sampled: 05/28/14 13:45
Percent Solids: 86
Initial Volume: 25.5
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | J 0.0142 (0.0418) | 0.0106 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| trans-1,2-Dichloroethene | ND (0.0418) | 0.0137 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| trans-1,3-Dichloropropene | ND (0.0418) | 0.0129 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Trichloroethene | ND (0.0418) | 0.0086 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Trichlorofluoromethane | ND (0.0418) | 0.0110 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Vinyl Acetate | ND (0.209) | 0.0086 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Vinyl Chloride | ND (0.0418) | 0.0138 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Xylene O | ND (0.0418) | 0.0080 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Xylene P,M | ND (0.0837) | 0.0162 | 8260B | | 1 | 06/09/14 16:24 | CXF0122 | CF40934 |
| Xylenes (Total) | ND (0.0837) | | 8260B | | 1 | 06/09/14 16:24 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>104 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>101 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>111 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>105 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-320D S-3
Date Sampled: 05/28/14 13:45
Percent Solids: 86
Initial Volume: 19.3
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 6/4/14 15:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 161 (44.9) | | 8100M | | 1 | 06/05/14 3:09 | CXF0043 | CF40311 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>105 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-320D S-3
Date Sampled: 05/28/14 13:45
Percent Solids: 86
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 6/5/14 9:16

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Acenaphthene | ND (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Acenaphthylene | ND (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Anthracene | ND (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Benzo(a)anthracene | 0.488 (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Benzo(a)pyrene | 0.387 (0.197) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Benzo(b)fluoranthene | 0.487 (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Benzo(g,h,i)perylene | ND (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Benzo(k)fluoranthene | ND (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Chrysene | 0.516 (0.197) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Dibenzo(a,h)Anthracene | ND (0.197) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Fluoranthene | 0.925 (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Fluorene | ND (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Indeno(1,2,3-cd)Pyrene | ND (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Naphthalene | 0.568 (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Phenanthrene | 0.686 (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |
| Pyrene | 0.728 (0.393) | | 8270C | | 1 | 06/05/14 16:50 | CXF0065 | CF40426 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 73 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 81 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 76 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 76 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: GZ-320D S-3
Date Sampled: 05/28/14 13:45
Percent Solids: 86

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-03
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | 1.27 (1.11) | | 9014 | | 1 | MJV | 06/06/14 12:40 | mg/kg dry | CF40619 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052814
Date Sampled: 05/28/14 08:00
Percent Solids: 87

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Antimony | ND (4.7) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |
| Arsenic | 7.3 (2.3) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |
| Beryllium | 0.29 (0.10) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |
| Cadmium | ND (0.47) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |
| Chromium | 7.2 (0.9) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |
| Copper | 16.2 (2.3) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |
| Lead | 41.9 (4.7) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |
| Mercury | ND (0.036) | | 7471A | | 1 | JP | 06/05/14 15:10 | 0.64 | 40 | CF40502 |
| Nickel | 11.4 (2.3) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |
| Selenium | ND (2.34) | | 7740 | | 5 | KJK | 06/12/14 5:50 | 2.48 | 100 | CF40906 |
| Silver | ND (0.47) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |
| Thallium | ND (1.15) | | 7841 | | 5 | KJK | 06/12/14 19:31 | 2.48 | 100 | CF40906 |
| Zinc | 43.6 (2.3) | | 6010B | | 1 | ICP | 06/11/14 0:34 | 2.48 | 100 | CF40906 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052814
Date Sampled: 05/28/14 08:00
Percent Solids: 87
Initial Volume: 27.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.0786) | 0.0068 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,1,1-Trichloroethane | ND (0.0393) | 0.0069 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,1,2,2-Tetrachloroethane | ND (0.0393) | 0.0107 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,1,2-Trichloroethane | ND (0.0393) | 0.0098 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,1-Dichloroethane | ND (0.0393) | 0.0063 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,1-Dichloroethene | ND (0.0393) | 0.0097 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,1-Dichloropropene | ND (0.0393) | 0.0060 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,2,3-Trichlorobenzene | ND (0.0393) | 0.0131 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,2,3-Trichloropropane | ND (0.0393) | 0.0097 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,2,4-Trichlorobenzene | ND (0.0393) | 0.0086 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,2,4-Trimethylbenzene | ND (0.0393) | 0.0075 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,2-Dibromo-3-Chloropropane | ND (0.236) | 0.0786 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,2-Dibromoethane | ND (0.0393) | 0.0100 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,2-Dichlorobenzene | ND (0.0393) | 0.0056 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,2-Dichloroethane | ND (0.0393) | 0.0105 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,2-Dichloropropane | ND (0.0393) | 0.0103 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,3,5-Trimethylbenzene | ND (0.0393) | 0.0069 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,3-Dichlorobenzene | ND (0.0393) | 0.0049 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,3-Dichloropropane | ND (0.0393) | 0.0088 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,4-Dichlorobenzene | ND (0.0393) | 0.0104 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1,4-Dioxane - Screen | ND (3.93) | 1.31 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 1-Chlorohexane | ND (0.0393) | 0.0075 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 2,2-Dichloropropane | ND (0.0786) | 0.0134 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 2-Butanone | ND (0.982) | 0.227 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 2-Chlorotoluene | ND (0.0393) | 0.0111 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 2-Hexanone | ND (0.393) | 0.0676 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 4-Chlorotoluene | ND (0.0393) | 0.0051 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 4-Isopropyltoluene | ND (0.0393) | 0.0070 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| 4-Methyl-2-Pentanone | ND (0.393) | 0.0473 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Acetone | ND (0.982) | 0.291 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Benzene | J 0.0236 (0.0393) | 0.0064 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Bromobenzene | ND (0.0393) | 0.0108 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052814
Date Sampled: 05/28/14 08:00
Percent Solids: 87
Initial Volume: 27.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0393) | 0.0127 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Bromodichloromethane | ND (0.0393) | 0.0054 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Bromoform | ND (0.0393) | 0.0113 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Bromomethane | ND (0.0786) | 0.0262 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Carbon Disulfide | ND (0.0393) | 0.0058 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Carbon Tetrachloride | ND (0.0393) | 0.0068 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Chlorobenzene | ND (0.0393) | 0.0062 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Chloroethane | ND (0.0786) | 0.0262 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Chloroform | B, J 0.0141 (0.0393) | 0.0081 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Chloromethane | ND (0.0786) | 0.0100 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| cis-1,2-Dichloroethene | ND (0.0393) | 0.0097 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| cis-1,3-Dichloropropene | ND (0.0393) | 0.0089 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Dibromochloromethane | ND (0.0393) | 0.0099 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Dibromomethane | ND (0.0393) | 0.0124 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Dichlorodifluoromethane | ND (0.0393) | 0.0068 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Diethyl Ether | ND (0.0393) | 0.0100 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Di-isopropyl ether | ND (0.0393) | 0.0074 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Ethyl tertiary-butyl ether | ND (0.0393) | 0.0099 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Ethylbenzene | ND (0.0393) | 0.0051 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Hexachlorobutadiene | ND (0.0393) | 0.0131 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Isopropylbenzene | ND (0.0393) | 0.0069 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Methyl tert-Butyl Ether | ND (0.0393) | 0.0063 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Methylene Chloride | ND (0.196) | 0.0103 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Naphthalene | ND (0.0393) | 0.0103 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| n-Butylbenzene | ND (0.0393) | 0.0097 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| n-Propylbenzene | ND (0.0393) | 0.0096 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| sec-Butylbenzene | ND (0.0393) | 0.0053 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Styrene | ND (0.0393) | 0.0052 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| tert-Butylbenzene | ND (0.0393) | 0.0092 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Tertiary-amyl methyl ether | ND (0.0393) | 0.0057 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Tetrachloroethene | ND (0.0393) | 0.0131 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Tetrahydrofuran | ND (0.393) | 0.101 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: BD-052814
 Date Sampled: 05/28/14 08:00
 Percent Solids: 87
 Initial Volume: 27.4
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1406074
 ESS Laboratory Sample ID: 1406074-04
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|--------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | J 0.0141 (0.0393) | 0.0100 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| trans-1,2-Dichloroethene | ND (0.0393) | 0.0129 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| trans-1,3-Dichloropropene | ND (0.0393) | 0.0121 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Trichloroethene | ND (0.0393) | 0.0081 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Trichlorofluoromethane | ND (0.0393) | 0.0104 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Vinyl Acetate | ND (0.196) | 0.0081 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Vinyl Chloride | ND (0.0393) | 0.0130 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Xylene O | ND (0.0393) | 0.0075 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Xylene P,M | J 0.0165 (0.0786) | 0.0152 | 8260B | | 1 | 06/09/14 16:52 | CXF0122 | CF40934 |
| Xylenes (Total) | ND (0.0786) | | 8260B | | 1 | 06/09/14 16:52 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 112 % | | 70-130 |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 107 % | | 70-130 |
| <i>Surrogate: Dibromofluoromethane</i> | 118 % | | 70-130 |
| <i>Surrogate: Toluene-d8</i> | 113 % | | 70-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052814
Date Sampled: 05/28/14 08:00
Percent Solids: 87
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: DPS
Prepared: 6/4/14 15:19

8100M Total Petroleum Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-------------------------------|----------------------|------------------|------------------|---------------|-----------|-----------------|-----------------|--------------|
| Total Petroleum Hydrocarbons | 160 (44.6) | | 8100M | | 1 | 06/05/14 3:47 | CXF0043 | CF40311 |
| | | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | | | | |
| <i>Surrogate: O-Terphenyl</i> | | <i>102 %</i> | | <i>40-140</i> | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052814
Date Sampled: 05/28/14 08:00
Percent Solids: 87
Initial Volume: 14.5
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 6/5/14 9:16

8270C Polynuclear Aromatic Hydrocarbons

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 2-Methylnaphthalene | ND (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Acenaphthene | ND (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Acenaphthylene | ND (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Anthracene | ND (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Benzo(a)anthracene | 0.513 (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Benzo(a)pyrene | 0.397 (0.199) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Benzo(b)fluoranthene | 0.578 (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Benzo(g,h,i)perylene | ND (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Benzo(k)fluoranthene | ND (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Chrysene | 0.550 (0.199) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Dibenzo(a,h)Anthracene | ND (0.199) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Fluoranthene | 1.04 (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Fluorene | ND (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Indeno(1,2,3-cd)Pyrene | ND (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Naphthalene | 0.717 (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Phenanthrene | 0.874 (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |
| Pyrene | 0.783 (0.397) | | 8270C | | 1 | 06/05/14 17:25 | CXF0065 | CF40426 |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|--|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichlorobenzene-d4</i> | 65 % | | 30-130 |
| <i>Surrogate: 2-Fluorobiphenyl</i> | 68 % | | 30-130 |
| <i>Surrogate: Nitrobenzene-d5</i> | 63 % | | 30-130 |
| <i>Surrogate: p-Terphenyl-d14</i> | 66 % | | 30-130 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD-052814
Date Sampled: 05/28/14 08:00
Percent Solids: 87

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-04
Sample Matrix: Soil

Classical Chemistry

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Units</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|--------------|--------------|
| Total Cyanide | 1.33 (1.10) | | 9014 | | 1 | MJV | 06/06/14 12:40 | mg/kg dry | CF40619 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank-52814
Date Sampled: 05/28/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-05
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|-----------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| 1,1,1,2-Tetrachloroethane | ND (0.100) | 0.0087 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,1,1-Trichloroethane | ND (0.0500) | 0.0088 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,1,2,2-Tetrachloroethane | ND (0.0500) | 0.0136 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,1,2-Trichloroethane | ND (0.0500) | 0.0125 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,1-Dichloroethane | ND (0.0500) | 0.0080 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,1-Dichloroethene | ND (0.0500) | 0.0123 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,1-Dichloropropene | ND (0.0500) | 0.0077 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,2,3-Trichlorobenzene | ND (0.0500) | 0.0167 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,2,3-Trichloropropane | ND (0.0500) | 0.0124 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,2,4-Trichlorobenzene | ND (0.0500) | 0.0110 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,2,4-Trimethylbenzene | ND (0.0500) | 0.0096 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,2-Dibromo-3-Chloropropane | ND (0.300) | 0.100 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,2-Dibromoethane | ND (0.0500) | 0.0127 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,2-Dichlorobenzene | ND (0.0500) | 0.0071 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,2-Dichloroethane | ND (0.0500) | 0.0134 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,2-Dichloropropane | ND (0.0500) | 0.0131 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,3,5-Trimethylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,3-Dichlorobenzene | ND (0.0500) | 0.0063 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,3-Dichloropropane | ND (0.0500) | 0.0112 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,4-Dichlorobenzene | ND (0.0500) | 0.0133 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1,4-Dioxane - Screen | ND (5.00) | 1.67 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 1-Chlorohexane | ND (0.0500) | 0.0095 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 2,2-Dichloropropane | ND (0.100) | 0.0171 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 2-Butanone | ND (1.25) | 0.289 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 2-Chlorotoluene | ND (0.0500) | 0.0141 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 2-Hexanone | ND (0.500) | 0.0861 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 4-Chlorotoluene | ND (0.0500) | 0.0065 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 4-Isopropyltoluene | ND (0.0500) | 0.0089 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| 4-Methyl-2-Pentanone | ND (0.500) | 0.0602 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Acetone | ND (1.25) | 0.370 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Benzene | ND (0.0500) | 0.0081 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Bromobenzene | ND (0.0500) | 0.0137 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: Trip Blank-52814
Date Sampled: 05/28/14 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1406074
ESS Laboratory Sample ID: 1406074-05
Sample Matrix: Soil
Units: mg/kg wet
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|----------------------------|-----------------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Bromochloromethane | ND (0.0500) | 0.0162 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Bromodichloromethane | ND (0.0500) | 0.0069 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Bromoform | ND (0.0500) | 0.0144 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Bromomethane | ND (0.100) | 0.0334 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Carbon Disulfide | ND (0.0500) | 0.0074 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Carbon Tetrachloride | ND (0.0500) | 0.0087 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Chlorobenzene | ND (0.0500) | 0.0079 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Chloroethane | ND (0.100) | 0.0333 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Chloroform | B, J 0.0210 (0.0500) | 0.0103 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Chloromethane | ND (0.100) | 0.0127 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| cis-1,2-Dichloroethene | ND (0.0500) | 0.0124 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| cis-1,3-Dichloropropene | ND (0.0500) | 0.0113 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Dibromochloromethane | ND (0.0500) | 0.0126 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Dibromomethane | ND (0.0500) | 0.0158 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Dichlorodifluoromethane | ND (0.0500) | 0.0087 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Diethyl Ether | ND (0.0500) | 0.0127 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Di-isopropyl ether | ND (0.0500) | 0.0094 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Ethyl tertiary-butyl ether | ND (0.0500) | 0.0126 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Ethylbenzene | ND (0.0500) | 0.0065 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Hexachlorobutadiene | ND (0.0500) | 0.0167 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Isopropylbenzene | ND (0.0500) | 0.0088 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Methyl tert-Butyl Ether | ND (0.0500) | 0.0080 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Methylene Chloride | ND (0.250) | 0.0131 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Naphthalene | ND (0.0500) | 0.0131 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| n-Butylbenzene | ND (0.0500) | 0.0123 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| n-Propylbenzene | ND (0.0500) | 0.0122 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| sec-Butylbenzene | ND (0.0500) | 0.0067 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Styrene | ND (0.0500) | 0.0066 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| tert-Butylbenzene | ND (0.0500) | 0.0117 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Tertiary-amyl methyl ether | ND (0.0500) | 0.0072 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Tetrachloroethene | ND (0.0500) | 0.0167 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Tetrahydrofuran | ND (0.500) | 0.129 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: 642 Allens Ave
 Client Sample ID: Trip Blank-52814
 Date Sampled: 05/28/14 00:00
 Percent Solids: N/A
 Initial Volume: 15
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 1406074
 ESS Laboratory Sample ID: 1406074-05
 Sample Matrix: Soil
 Units: mg/kg wet
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyzed</u> | <u>Sequence</u> | <u>Batch</u> |
|---------------------------|----------------------|------------|---------------|--------------|-----------|-----------------|-----------------|--------------|
| Toluene | ND (0.0500) | 0.0127 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| trans-1,2-Dichloroethene | ND (0.0500) | 0.0164 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| trans-1,3-Dichloropropene | ND (0.0500) | 0.0154 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Trichloroethene | ND (0.0500) | 0.0103 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Trichlorofluoromethane | ND (0.0500) | 0.0132 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Vinyl Acetate | ND (0.250) | 0.0103 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Vinyl Chloride | ND (0.0500) | 0.0165 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Xylene O | ND (0.0500) | 0.0096 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Xylene P,M | ND (0.100) | 0.0194 | 8260B | | 1 | 06/09/14 12:11 | CXF0122 | CF40934 |
| Xylenes (Total) | ND (0.100) | | 8260B | | 1 | 06/09/14 12:11 | | [CALC] |

| | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
|---|------------------|------------------|---------------|
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>93 %</i> | | <i>70-130</i> |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>95 %</i> | | <i>70-130</i> |
| <i>Surrogate: Dibromofluoromethane</i> | <i>97 %</i> | | <i>70-130</i> |
| <i>Surrogate: Toluene-d8</i> | <i>96 %</i> | | <i>70-130</i> |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CF40502 - 7471A

Blank

| | | | | | | | | | | |
|---------|----|-------|-----------|--|--|--|--|--|--|--|
| Mercury | ND | 0.033 | mg/kg wet | | | | | | | |
|---------|----|-------|-----------|--|--|--|--|--|--|--|

LCS

| | | | | | | | | | | |
|---------|------|------|-----------|-------|--|-----|--------|--|--|--|
| Mercury | 10.9 | 1.55 | mg/kg wet | 10.40 | | 105 | 80-120 | | | |
|---------|------|------|-----------|-------|--|-----|--------|--|--|--|

LCS Dup

| | | | | | | | | | | |
|---------|------|------|-----------|-------|--|-----|--------|---|----|--|
| Mercury | 11.2 | 1.62 | mg/kg wet | 10.40 | | 108 | 80-120 | 2 | 20 | |
|---------|------|------|-----------|-------|--|-----|--------|---|----|--|

Batch CF40906 - 3050B

Blank

| | | | | | | | | | | |
|-----------|----|------|-----------|--|--|--|--|--|--|--|
| Antimony | ND | 5.0 | mg/kg wet | | | | | | | |
| Arsenic | ND | 2.5 | mg/kg wet | | | | | | | |
| Beryllium | ND | 0.10 | mg/kg wet | | | | | | | |
| Cadmium | ND | 0.50 | mg/kg wet | | | | | | | |
| Chromium | ND | 1.0 | mg/kg wet | | | | | | | |
| Copper | ND | 2.5 | mg/kg wet | | | | | | | |
| Lead | ND | 5.0 | mg/kg wet | | | | | | | |
| Nickel | ND | 2.5 | mg/kg wet | | | | | | | |
| Selenium | ND | 0.50 | mg/kg wet | | | | | | | |
| Silver | ND | 0.50 | mg/kg wet | | | | | | | |
| Thallium | ND | 0.25 | mg/kg wet | | | | | | | |
| Zinc | ND | 2.5 | mg/kg wet | | | | | | | |

LCS

| | | | | | | | | | | |
|-----------|------|------|-----------|-------|--|----|--------|--|--|----|
| Antimony | 42.2 | 15.2 | mg/kg wet | 74.00 | | 57 | 80-120 | | | B- |
| Arsenic | 79.9 | 7.6 | mg/kg wet | 89.30 | | 90 | 80-120 | | | |
| Beryllium | 62.7 | 0.32 | mg/kg wet | 73.00 | | 86 | 80-120 | | | |
| Cadmium | 53.8 | 1.52 | mg/kg wet | 63.90 | | 84 | 80-120 | | | |
| Chromium | 109 | 3.0 | mg/kg wet | 127.0 | | 86 | 80-120 | | | |
| Copper | 92.3 | 7.6 | mg/kg wet | 102.0 | | 90 | 80-120 | | | |
| Lead | 157 | 15.2 | mg/kg wet | 176.0 | | 89 | 80-120 | | | |
| Nickel | 81.7 | 7.6 | mg/kg wet | 92.90 | | 88 | 80-120 | | | |
| Selenium | 119 | 76.1 | mg/kg wet | 124.0 | | 96 | 80-120 | | | |
| Silver | 43.4 | 1.52 | mg/kg wet | 48.90 | | 89 | 80-120 | | | |
| Thallium | 148 | 37.5 | mg/kg wet | 169.0 | | 87 | 80-120 | | | |
| Zinc | 183 | 7.6 | mg/kg wet | 219.0 | | 84 | 80-120 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------|------|------|-----------|-------|--|-----|--------|-----|----|----|
| Antimony | 60.2 | 14.7 | mg/kg wet | 74.00 | | 81 | 80-120 | 35 | 20 | D+ |
| Arsenic | 76.5 | 7.3 | mg/kg wet | 89.30 | | 86 | 80-120 | 4 | 20 | |
| Beryllium | 48.2 | 0.31 | mg/kg wet | 73.00 | | 66 | 80-120 | 26 | 20 | B- |
| Cadmium | 51.4 | 1.48 | mg/kg wet | 63.90 | | 80 | 80-120 | 4 | 20 | |
| Chromium | 105 | 2.9 | mg/kg wet | 127.0 | | 82 | 80-120 | 4 | 20 | |
| Copper | 93.7 | 7.3 | mg/kg wet | 102.0 | | 92 | 80-120 | 2 | 20 | |
| Lead | 130 | 14.7 | mg/kg wet | 176.0 | | 74 | 80-120 | 19 | 20 | B- |
| Nickel | 87.8 | 7.3 | mg/kg wet | 92.90 | | 94 | 80-120 | 7 | 20 | |
| Selenium | 133 | 73.9 | mg/kg wet | 124.0 | | 107 | 80-120 | 11 | 20 | |
| Silver | 43.7 | 1.48 | mg/kg wet | 48.90 | | 89 | 80-120 | 0.8 | 20 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

Total Metals Solid

Batch CF40906 - 3050B

| | | | | | | | | | | |
|----------|-----|------|-----------|-------|--|----|--------|----|----|----|
| Thallium | 165 | 36.4 | mg/kg wet | 169.0 | | 97 | 80-120 | 11 | 20 | |
| Zinc | 163 | 7.3 | mg/kg wet | 219.0 | | 75 | 80-120 | 12 | 20 | B- |

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40934 - 5035

Blank

| | | | |
|-----------------------------|----|--------|-----------|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet |
| 2-Butanone | ND | 1.25 | mg/kg wet |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet |
| 2-Hexanone | ND | 0.500 | mg/kg wet |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet |
| Acetone | ND | 1.25 | mg/kg wet |
| Benzene | ND | 0.0500 | mg/kg wet |
| Bromobenzene | ND | 0.0500 | mg/kg wet |
| Bromochloromethane | ND | 0.0500 | mg/kg wet |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet |
| Bromoform | ND | 0.0500 | mg/kg wet |
| Bromomethane | ND | 0.100 | mg/kg wet |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet |
| Chlorobenzene | ND | 0.0500 | mg/kg wet |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40934 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|----|--------|--|--|---|
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0170 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.30 | | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.37 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.36 | | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.37 | | mg/kg wet | 2.500 | | 95 | 70-130 | | | |

LCS

| | | | | | | | | | | |
|---------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.58 | 0.100 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.73 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| 1,1-Dichloroethane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,1-Dichloroethene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 1,1-Dichloropropene | 2.97 | 0.0500 | mg/kg wet | 2.500 | | 119 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40934 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,2,3-Trichlorobenzene | 2.73 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.73 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.72 | 0.300 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 1,2-Dibromoethane | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.73 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 1,2-Dichloroethane | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| 1,2-Dichloropropane | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| 1,3-Dichloropropane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| 1,4-Dioxane - Screen | 67.1 | 5.00 | mg/kg wet | 50.00 | | 134 | 44-241 | | | |
| 1-Chlorohexane | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 2,2-Dichloropropane | 2.85 | 0.100 | mg/kg wet | 2.500 | | 114 | 70-130 | | | |
| 2-Butanone | 13.5 | 1.25 | mg/kg wet | 12.50 | | 108 | 70-130 | | | |
| 2-Chlorotoluene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| 2-Hexanone | 13.3 | 0.500 | mg/kg wet | 12.50 | | 106 | 70-130 | | | |
| 4-Chlorotoluene | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| 4-Isopropyltoluene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 13.6 | 0.500 | mg/kg wet | 12.50 | | 109 | 70-130 | | | |
| Acetone | 15.4 | 1.25 | mg/kg wet | 12.50 | | 123 | 70-130 | | | |
| Benzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Bromobenzene | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Bromochloromethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Bromodichloromethane | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| Bromoform | 2.90 | 0.0500 | mg/kg wet | 2.500 | | 116 | 70-130 | | | |
| Bromomethane | 2.81 | 0.100 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| Carbon Disulfide | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Carbon Tetrachloride | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Chlorobenzene | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Chloroethane | 2.36 | 0.100 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Chloroform | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Chloromethane | 2.49 | 0.100 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.88 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.94 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | | | |
| Dibromochloromethane | 2.89 | 0.0500 | mg/kg wet | 2.500 | | 116 | 70-130 | | | |
| Dibromomethane | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Dichlorodifluoromethane | 2.12 | 0.0500 | mg/kg wet | 2.500 | | 85 | 70-130 | | | |
| Diethyl Ether | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| Di-isopropyl ether | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Ethylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Hexachlorobutadiene | 2.79 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40934 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Isopropylbenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Methylene Chloride | 2.74 | 0.250 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Naphthalene | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| n-Butylbenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| n-Propylbenzene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| sec-Butylbenzene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| Styrene | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| tert-Butylbenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Tetrachloroethene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Tetrahydrofuran | 2.55 | 0.500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Toluene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Trichloroethene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Vinyl Acetate | 2.66 | 0.250 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Vinyl Chloride | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Xylene O | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| Xylene P,M | 5.30 | 0.100 | mg/kg wet | 5.000 | | 106 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.59 | | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.58 | | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.55 | | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.58 | | mg/kg wet | 2.500 | | 103 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| 1,1,1,2-Tetrachloroethane | 2.53 | 0.100 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| 1,1,1-Trichloroethane | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 4 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| 1,1,2-Trichloroethane | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 2 | 25 | |
| 1,1-Dichloroethane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 4 | 25 | |
| 1,1-Dichloroethene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 2 | 25 | |
| 1,1-Dichloropropene | 2.88 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | 3 | 25 | |
| 1,2,3-Trichlorobenzene | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 1 | 25 | |
| 1,2,3-Trichloropropane | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 0.2 | 25 | |
| 1,2,4-Trichlorobenzene | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 0 | 25 | |
| 1,2,4-Trimethylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 2 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.62 | 0.300 | mg/kg wet | 2.500 | | 105 | 70-130 | 4 | 25 | |
| 1,2-Dibromoethane | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 3 | 25 | |
| 1,2-Dichlorobenzene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 2 | 25 | |
| 1,2-Dichloroethane | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 3 | 25 | |
| 1,2-Dichloropropane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 4 | 25 | |
| 1,3,5-Trimethylbenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.4 | 25 | |
| 1,3-Dichlorobenzene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 1 | 25 | |
| 1,3-Dichloropropane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| 1,4-Dichlorobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.2 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40934 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|-----|-----|--|
| 1,4-Dioxane - Screen | 66.6 | 5.00 | mg/kg wet | 50.00 | | 133 | 44-241 | 0.7 | 200 | |
| 1-Chlorohexane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 3 | 25 | |
| 2,2-Dichloropropane | 2.78 | 0.100 | mg/kg wet | 2.500 | | 111 | 70-130 | 2 | 25 | |
| 2-Butanone | 12.7 | 1.25 | mg/kg wet | 12.50 | | 102 | 70-130 | 7 | 25 | |
| 2-Chlorotoluene | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 2 | 25 | |
| 2-Hexanone | 13.0 | 0.500 | mg/kg wet | 12.50 | | 104 | 70-130 | 2 | 25 | |
| 4-Chlorotoluene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 2 | 25 | |
| 4-Isopropyltoluene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 2 | 25 | |
| 4-Methyl-2-Pentanone | 13.2 | 0.500 | mg/kg wet | 12.50 | | 105 | 70-130 | 3 | 25 | |
| Acetone | 14.6 | 1.25 | mg/kg wet | 12.50 | | 117 | 70-130 | 6 | 25 | |
| Benzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 3 | 25 | |
| Bromobenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 4 | 25 | |
| Bromochloromethane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 5 | 25 | |
| Bromodichloromethane | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| Bromoform | 2.82 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | 3 | 25 | |
| Bromomethane | 2.69 | 0.100 | mg/kg wet | 2.500 | | 108 | 70-130 | 4 | 25 | |
| Carbon Disulfide | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 3 | 25 | |
| Carbon Tetrachloride | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Chlorobenzene | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 3 | 25 | |
| Chloroethane | 2.28 | 0.100 | mg/kg wet | 2.500 | | 91 | 70-130 | 4 | 25 | |
| Chloroform | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 4 | 25 | |
| Chloromethane | 2.41 | 0.100 | mg/kg wet | 2.500 | | 96 | 70-130 | 3 | 25 | |
| cis-1,2-Dichloroethene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 3 | 25 | |
| cis-1,3-Dichloropropene | 2.81 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 5 | 25 | |
| Dibromochloromethane | 2.84 | 0.0500 | mg/kg wet | 2.500 | | 114 | 70-130 | 2 | 25 | |
| Dibromomethane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 3 | 25 | |
| Dichlorodifluoromethane | 2.09 | 0.0500 | mg/kg wet | 2.500 | | 83 | 70-130 | 2 | 25 | |
| Diethyl Ether | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 7 | 25 | |
| Di-isopropyl ether | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 3 | 25 | |
| Ethyl tertiary-butyl ether | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 6 | 25 | |
| Ethylbenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 2 | 25 | |
| Hexachlorobutadiene | 2.83 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | 1 | 25 | |
| Isopropylbenzene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 0.3 | 25 | |
| Methyl tert-Butyl Ether | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 3 | 25 | |
| Methylene Chloride | 2.66 | 0.250 | mg/kg wet | 2.500 | | 106 | 70-130 | 3 | 25 | |
| Naphthalene | 2.70 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 2 | 25 | |
| n-Butylbenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 1 | 25 | |
| n-Propylbenzene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.4 | 25 | |
| sec-Butylbenzene | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 0.9 | 25 | |
| Styrene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 3 | 25 | |
| tert-Butylbenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 0.5 | 25 | |
| Tertiary-amyl methyl ether | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 3 | 25 | |
| Tetrachloroethene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 0.5 | 25 | |
| Tetrahydrofuran | 2.60 | 0.500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Toluene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF40934 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|-----|----|--|
| trans-1,2-Dichloroethene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| trans-1,3-Dichloropropene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 6 | 25 | |
| Trichloroethene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 2 | 25 | |
| Vinyl Acetate | 2.53 | 0.250 | mg/kg wet | 2.500 | | 101 | 70-130 | 5 | 25 | |
| Vinyl Chloride | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 0.8 | 25 | |
| Xylene O | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 1 | 25 | |
| Xylene P,M | 5.25 | 0.100 | mg/kg wet | 5.000 | | 105 | 70-130 | 0.9 | 25 | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.50 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.52 | | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.46 | | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.50 | | mg/kg wet | 2.500 | | 100 | 70-130 | | | |

Batch CF41114 - 5035

| Blank | | | | | | | | | | |
|-----------------------------|----|--------|-----------|--|--|--|--|--|--|--|
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF41114 - 5035

| | | | | | | | | | | |
|----------------------------------|--------|--------|-----------|-------|--|----|--------|--|--|---|
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | 0.0160 | 0.0500 | mg/kg wet | | | | | | | J |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | ND | 0.250 | mg/kg wet | | | | | | | |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.05 | | mg/kg wet | 2.500 | | 82 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.13 | | mg/kg wet | 2.500 | | 85 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.15 | | mg/kg wet | 2.500 | | 86 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.16 | | mg/kg wet | 2.500 | | 86 | 70-130 | | | |

LCS



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF41114 - 5035

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| 1,1,1,2-Tetrachloroethane | 2.37 | 0.100 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,1-Dichloroethane | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,1-Dichloroethene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,1-Dichloropropene | 2.75 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.41 | 0.300 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,2-Dibromoethane | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,2-Dichloroethane | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,2-Dichloropropane | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,3-Dichloropropane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.37 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | | | |
| 1,4-Dioxane - Screen | 58.1 | 5.00 | mg/kg wet | 50.00 | | 116 | 44-241 | | | |
| 1-Chlorohexane | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 2,2-Dichloropropane | 2.65 | 0.100 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 2-Butanone | 12.4 | 1.25 | mg/kg wet | 12.50 | | 99 | 70-130 | | | |
| 2-Chlorotoluene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| 2-Hexanone | 12.1 | 0.500 | mg/kg wet | 12.50 | | 96 | 70-130 | | | |
| 4-Chlorotoluene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 4-Isopropyltoluene | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 12.2 | 0.500 | mg/kg wet | 12.50 | | 98 | 70-130 | | | |
| Acetone | 16.0 | 1.25 | mg/kg wet | 12.50 | | 128 | 70-130 | | | |
| Benzene | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Bromobenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Bromochloromethane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Bromodichloromethane | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Bromoform | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | | | |
| Bromomethane | 2.34 | 0.100 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Carbon Disulfide | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Carbon Tetrachloride | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Chlorobenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Chloroethane | 2.17 | 0.100 | mg/kg wet | 2.500 | | 87 | 70-130 | | | |
| Chloroform | 2.29 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| Chloromethane | 2.31 | 0.100 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | | | |
| Dibromochloromethane | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF41114 - 5035

| | | | | | | | | | | |
|----------------------------------|------|--------|-----------|-------|--|-----|--------|--|--|--|
| Dibromomethane | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Dichlorodifluoromethane | 2.05 | 0.0500 | mg/kg wet | 2.500 | | 82 | 70-130 | | | |
| Diethyl Ether | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Di-isopropyl ether | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Ethylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Hexachlorobutadiene | 2.54 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Isopropylbenzene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Methylene Chloride | 2.52 | 0.250 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Naphthalene | 2.43 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| n-Butylbenzene | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| n-Propylbenzene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| sec-Butylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Styrene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| tert-Butylbenzene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Tetrachloroethene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Tetrahydrofuran | 2.50 | 0.500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Toluene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Trichloroethene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Vinyl Acetate | 2.47 | 0.250 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| Vinyl Chloride | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| Xylene O | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| Xylene P,M | 5.02 | 0.100 | mg/kg wet | 5.000 | | 100 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 2.12 | | mg/kg wet | 2.500 | | 85 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 2.12 | | mg/kg wet | 2.500 | | 85 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 2.09 | | mg/kg wet | 2.500 | | 84 | 70-130 | | | |
| Surrogate: Toluene-d8 | 2.16 | | mg/kg wet | 2.500 | | 87 | 70-130 | | | |

LCS Dup

| | | | | | | | | | | |
|-----------------------------|------|--------|-----------|-------|--|-----|--------|---|----|--|
| 1,1,1,2-Tetrachloroethane | 2.48 | 0.100 | mg/kg wet | 2.500 | | 99 | 70-130 | 5 | 25 | |
| 1,1,1-Trichloroethane | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 4 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 4 | 25 | |
| 1,1,2-Trichloroethane | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 6 | 25 | |
| 1,1-Dichloroethane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 5 | 25 | |
| 1,1-Dichloroethene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 5 | 25 | |
| 1,1-Dichloropropene | 2.86 | 0.0500 | mg/kg wet | 2.500 | | 114 | 70-130 | 4 | 25 | |
| 1,2,3-Trichlorobenzene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 7 | 25 | |
| 1,2,3-Trichloropropane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| 1,2,4-Trichlorobenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 5 | 25 | |
| 1,2,4-Trimethylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 5 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.51 | 0.300 | mg/kg wet | 2.500 | | 100 | 70-130 | 4 | 25 | |
| 1,2-Dibromoethane | 2.68 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 5 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF41114 - 5035

| | | | | | | | | | | |
|----------------------------|------|--------|-----------|-------|--|-----|--------|----|-----|----|
| 1,2-Dichlorobenzene | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 5 | 25 | |
| 1,2-Dichloroethane | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 6 | 25 | |
| 1,2-Dichloropropane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 4 | 25 | |
| 1,3,5-Trimethylbenzene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 5 | 25 | |
| 1,3-Dichlorobenzene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| 1,3-Dichloropropane | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 4 | 25 | |
| 1,4-Dichlorobenzene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 4 | 25 | |
| 1,4-Dioxane - Screen | 64.3 | 5.00 | mg/kg wet | 50.00 | | 129 | 44-241 | 10 | 200 | |
| 1-Chlorohexane | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| 2,2-Dichloropropane | 2.78 | 0.100 | mg/kg wet | 2.500 | | 111 | 70-130 | 5 | 25 | |
| 2-Butanone | 13.2 | 1.25 | mg/kg wet | 12.50 | | 105 | 70-130 | 6 | 25 | |
| 2-Chlorotoluene | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 6 | 25 | |
| 2-Hexanone | 13.0 | 0.500 | mg/kg wet | 12.50 | | 104 | 70-130 | 7 | 25 | |
| 4-Chlorotoluene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 5 | 25 | |
| 4-Isopropyltoluene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 3 | 25 | |
| 4-Methyl-2-Pentanone | 13.1 | 0.500 | mg/kg wet | 12.50 | | 105 | 70-130 | 7 | 25 | |
| Acetone | 16.5 | 1.25 | mg/kg wet | 12.50 | | 132 | 70-130 | 3 | 25 | B+ |
| Benzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 4 | 25 | |
| Bromobenzene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| Bromochloromethane | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 2 | 25 | |
| Bromodichloromethane | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 6 | 25 | |
| Bromoform | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 5 | 25 | |
| Bromomethane | 2.44 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | 4 | 25 | |
| Carbon Disulfide | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 4 | 25 | |
| Carbon Tetrachloride | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 6 | 25 | |
| Chlorobenzene | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 4 | 25 | |
| Chloroethane | 2.27 | 0.100 | mg/kg wet | 2.500 | | 91 | 70-130 | 5 | 25 | |
| Chloroform | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 5 | 25 | |
| Chloromethane | 2.43 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | 5 | 25 | |
| cis-1,2-Dichloroethene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 5 | 25 | |
| cis-1,3-Dichloropropene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 5 | 25 | |
| Dibromochloromethane | 2.77 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 4 | 25 | |
| Dibromomethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 4 | 25 | |
| Dichlorodifluoromethane | 2.09 | 0.0500 | mg/kg wet | 2.500 | | 84 | 70-130 | 2 | 25 | |
| Diethyl Ether | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 3 | 25 | |
| Di-isopropyl ether | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 5 | 25 | |
| Ethyl tertiary-butyl ether | 2.66 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 5 | 25 | |
| Ethylbenzene | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | 4 | 25 | |
| Hexachlorobutadiene | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 7 | 25 | |
| Isopropylbenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 5 | 25 | |
| Methyl tert-Butyl Ether | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 6 | 25 | |
| Methylene Chloride | 2.64 | 0.250 | mg/kg wet | 2.500 | | 106 | 70-130 | 5 | 25 | |
| Naphthalene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 7 | 25 | |
| n-Butylbenzene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 3 | 25 | |
| n-Propylbenzene | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 3 | 25 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

5035/8260B Volatile Organic Compounds / Methanol

Batch CF41114 - 5035

| | | | | | | | | | | |
|---|------|--------|-----------|-------|--|-----|--------|---|----|--|
| sec-Butylbenzene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 5 | 25 | |
| Styrene | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 5 | 25 | |
| tert-Butylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 5 | 25 | |
| Tertiary-amyl methyl ether | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 4 | 25 | |
| Tetrachloroethene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 4 | 25 | |
| Tetrahydrofuran | 2.58 | 0.500 | mg/kg wet | 2.500 | | 103 | 70-130 | 3 | 25 | |
| Toluene | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 5 | 25 | |
| trans-1,2-Dichloroethene | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 5 | 25 | |
| trans-1,3-Dichloropropene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 5 | 25 | |
| Trichloroethene | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 4 | 25 | |
| Vinyl Acetate | 2.59 | 0.250 | mg/kg wet | 2.500 | | 104 | 70-130 | 5 | 25 | |
| Vinyl Chloride | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 2 | 25 | |
| Xylene O | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | 3 | 25 | |
| Xylene P,M | 5.21 | 0.100 | mg/kg wet | 5.000 | | 104 | 70-130 | 4 | 25 | |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 2.22 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 2.20 | | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| <i>Surrogate: Dibromofluoromethane</i> | 2.19 | | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| <i>Surrogate: Toluene-d8</i> | 2.23 | | mg/kg wet | 2.500 | | 89 | 70-130 | | | |

8100M Total Petroleum Hydrocarbons

Batch CF40311 - 3546

| Blank | | | | | | | | | | |
|-------------------------------|------|------|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacontane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |
| <i>Surrogate: O-Terphenyl</i> | 4.78 | | mg/kg wet | 5.000 | | 96 | 40-140 | | | |

| LCS | | | | | | | | | | |
|------------------|-----|-----|-----------|-------|--|----|--------|--|--|--|
| Decane (C10) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 80 | 40-140 | | | |
| Docosane (C22) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | | | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 84 | 40-140 | | | |
| Eicosane (C20) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | | | |
| Hexacosane (C26) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 98 | 40-140 | | | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8100M Total Petroleum Hydrocarbons

Batch CF40311 - 3546

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|-----|--------|--|--|--|
| Nonadecane (C19) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 99 | 40-140 | | | |
| Nonane (C9) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 75 | 30-140 | | | |
| Octacosane (C28) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 99 | 40-140 | | | |
| Octadecane (C18) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | | | |
| Tetracosane (C24) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | | | |
| Tetradecane (C14) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 83 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 36.2 | 37.5 | mg/kg wet | 35.00 | | 103 | 40-140 | | | |
| Triacotane (C30) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 101 | 40-140 | | | |

Surrogate: O-Terphenyl

4.88 mg/kg wet 5.000 98 40-140

LCS Dup

| | | | | | | | | | | |
|------------------------------|------|------|-----------|-------|--|-----|--------|-----|----|--|
| Decane (C10) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 82 | 40-140 | 1 | 25 | |
| Docosane (C22) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 99 | 40-140 | 2 | 25 | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 82 | 40-140 | 2 | 25 | |
| Eicosane (C20) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | 0.2 | 25 | |
| Hexacosane (C26) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 97 | 40-140 | 0.6 | 25 | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | 1 | 25 | |
| Nonadecane (C19) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 98 | 40-140 | 0.8 | 25 | |
| Nonane (C9) | 1.9 | 0.2 | mg/kg wet | 2.500 | | 76 | 30-140 | 2 | 25 | |
| Octacosane (C28) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 99 | 40-140 | 0.4 | 25 | |
| Octadecane (C18) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | 1 | 25 | |
| Tetracosane (C24) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 95 | 40-140 | 0.5 | 25 | |
| Tetradecane (C14) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 82 | 40-140 | 1 | 25 | |
| Total Petroleum Hydrocarbons | 36.4 | 37.5 | mg/kg wet | 35.00 | | 104 | 40-140 | 0.5 | 25 | |
| Triacotane (C30) | 2.5 | 0.2 | mg/kg wet | 2.500 | | 102 | 40-140 | 0.5 | 25 | |

Surrogate: O-Terphenyl

4.67 mg/kg wet 5.000 93 40-140

8270C Polynuclear Aromatic Hydrocarbons

Batch CF40426 - 3546

Blank

| | | | | | | | | | | |
|------------------------|----|-------|-----------|--|--|--|--|--|--|--|
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Acenaphthylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)anthracene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(a)pyrene | ND | 0.167 | mg/kg wet | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.333 | mg/kg wet | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Chrysene | ND | 0.167 | mg/kg wet | | | | | | | |
| Dibenzo(a,h)Anthracene | ND | 0.167 | mg/kg wet | | | | | | | |
| Fluoranthene | ND | 0.333 | mg/kg wet | | | | | | | |
| Fluorene | ND | 0.333 | mg/kg wet | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CF40426 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|-----|--------|--|--|--|
| Naphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| Phenanthrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Pyrene | ND | 0.333 | mg/kg wet | | | | | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.51 | | mg/kg wet | 3.333 | | 75 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 2.66 | | mg/kg wet | 3.333 | | 80 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.49 | | mg/kg wet | 3.333 | | 75 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.36 | | mg/kg wet | 3.333 | | 101 | 30-130 | | | |

LCS

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|----|--------|--|--|--|
| 2-Methylnaphthalene | 2.38 | 0.333 | mg/kg wet | 3.333 | | 71 | 40-140 | | | |
| Acenaphthene | 2.52 | 0.333 | mg/kg wet | 3.333 | | 76 | 40-140 | | | |
| Acenaphthylene | 2.55 | 0.333 | mg/kg wet | 3.333 | | 76 | 40-140 | | | |
| Anthracene | 3.00 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | | | |
| Benzo(a)anthracene | 2.84 | 0.333 | mg/kg wet | 3.333 | | 85 | 40-140 | | | |
| Benzo(a)pyrene | 2.56 | 0.167 | mg/kg wet | 3.333 | | 77 | 40-140 | | | |
| Benzo(b)fluoranthene | 2.91 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Benzo(g,h,i)perylene | 2.80 | 0.333 | mg/kg wet | 3.333 | | 84 | 40-140 | | | |
| Benzo(k)fluoranthene | 2.86 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Chrysene | 2.89 | 0.167 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| Dibenzo(a,h)Anthracene | 2.92 | 0.167 | mg/kg wet | 3.333 | | 88 | 40-140 | | | |
| Fluoranthene | 3.08 | 0.333 | mg/kg wet | 3.333 | | 93 | 40-140 | | | |
| Fluorene | 2.68 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | | | |
| Indeno(1,2,3-cd)Pyrene | 2.85 | 0.333 | mg/kg wet | 3.333 | | 86 | 40-140 | | | |
| Naphthalene | 2.39 | 0.333 | mg/kg wet | 3.333 | | 72 | 40-140 | | | |
| Phenanthrene | 3.09 | 0.333 | mg/kg wet | 3.333 | | 93 | 40-140 | | | |
| Pyrene | 2.97 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | | | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.43 | | mg/kg wet | 3.333 | | 73 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 2.56 | | mg/kg wet | 3.333 | | 77 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.47 | | mg/kg wet | 3.333 | | 74 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.17 | | mg/kg wet | 3.333 | | 95 | 30-130 | | | |

LCS Dup

| | | | | | | | | | | |
|------------------------|------|-------|-----------|-------|--|----|--------|-----|----|--|
| 2-Methylnaphthalene | 2.60 | 0.333 | mg/kg wet | 3.333 | | 78 | 40-140 | 9 | 30 | |
| Acenaphthene | 2.66 | 0.333 | mg/kg wet | 3.333 | | 80 | 40-140 | 5 | 30 | |
| Acenaphthylene | 2.69 | 0.333 | mg/kg wet | 3.333 | | 81 | 40-140 | 5 | 30 | |
| Anthracene | 2.99 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | 0.4 | 30 | |
| Benzo(a)anthracene | 2.93 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | 3 | 30 | |
| Benzo(a)pyrene | 2.65 | 0.167 | mg/kg wet | 3.333 | | 80 | 40-140 | 3 | 30 | |
| Benzo(b)fluoranthene | 2.98 | 0.333 | mg/kg wet | 3.333 | | 89 | 40-140 | 2 | 30 | |
| Benzo(g,h,i)perylene | 2.89 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | 3 | 30 | |
| Benzo(k)fluoranthene | 2.94 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | 3 | 30 | |
| Chrysene | 2.97 | 0.167 | mg/kg wet | 3.333 | | 89 | 40-140 | 3 | 30 | |
| Dibenzo(a,h)Anthracene | 3.02 | 0.167 | mg/kg wet | 3.333 | | 91 | 40-140 | 3 | 30 | |
| Fluoranthene | 3.10 | 0.333 | mg/kg wet | 3.333 | | 93 | 40-140 | 0.5 | 30 | |
| Fluorene | 2.78 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | 4 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 2.94 | 0.333 | mg/kg wet | 3.333 | | 88 | 40-140 | 3 | 30 | |
| Naphthalene | 2.58 | 0.333 | mg/kg wet | 3.333 | | 77 | 40-140 | 7 | 30 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

8270C Polynuclear Aromatic Hydrocarbons

Batch CF40426 - 3546

| | | | | | | | | | | |
|-----------------------------------|------|-------|-----------|-------|--|----|--------|-----|----|--|
| Phenanthrene | 3.08 | 0.333 | mg/kg wet | 3.333 | | 92 | 40-140 | 0.5 | 30 | |
| Pyrene | 3.01 | 0.333 | mg/kg wet | 3.333 | | 90 | 40-140 | 1 | 30 | |
| Surrogate: 1,2-Dichlorobenzene-d4 | 2.35 | | mg/kg wet | 3.333 | | 71 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | 2.63 | | mg/kg wet | 3.333 | | 79 | 30-130 | | | |
| Surrogate: Nitrobenzene-d5 | 2.58 | | mg/kg wet | 3.333 | | 77 | 30-130 | | | |
| Surrogate: p-Terphenyl-d14 | 3.07 | | mg/kg wet | 3.333 | | 92 | 30-130 | | | |

Classical Chemistry

Batch CF40619 - General Preparation

| | | | | | | | | | | |
|------------------|------|------|-----------|-------|--|-----|--------|--|--|--|
| Blank | | | | | | | | | | |
| Total Cyanide | ND | 1.00 | mg/kg wet | | | | | | | |
| LCS | | | | | | | | | | |
| Total Cyanide | 5.04 | 1.00 | mg/kg wet | 5.015 | | 101 | 90-110 | | | |
| Reference | | | | | | | | | | |
| Total Cyanide | 109 | 4.70 | mg/kg wet | 101.0 | | 108 | 31-168 | | | |
| Reference | | | | | | | | | | |
| Total Cyanide | 111 | 4.82 | mg/kg wet | 101.0 | | 110 | 31-168 | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

Notes and Definitions

- U Analyte included in the analysis, but not detected
- J Reported between MDL and MRL
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- D+ Relative percent difference for duplicate is outside of criteria (D+).
- D Diluted.
- C+ Continuing Calibration recovery is above upper control limit (C+).
- B+ Blank Spike recovery is above upper control limit (B+).
- B- Blank Spike recovery is below lower control limit (B-).
- B Present in Method Blank (B).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1406074

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 14060074
Date Project Due: 6/11/14
Days For Project: 5 Day

Items to be checked upon receipt:

- | | | | |
|---|-------------------------------|---|---|
| 1. Air Bill Manifest Present? | <input type="checkbox"/> * No | 10. Are the samples properly preserved? | <input type="checkbox"/> Yes |
| Air No.: | | 11. Proper sample containers used? | <input type="checkbox"/> Yes |
| 2. Were Custody Seals Present? | <input type="checkbox"/> No | 12. Any air bubbles in the VOA vials? | <input type="checkbox"/> N/A |
| 3. Were Custody Seals Intact? | <input type="checkbox"/> N/A | 13. Holding times exceeded? | <input type="checkbox"/> No |
| 4. Is Radiation count < 100 CPM? | <input type="checkbox"/> Yes | 14. Sufficient sample volumes? | <input type="checkbox"/> Yes |
| 5. Is a cooler present? | <input type="checkbox"/> Yes | 15. Any Subcontracting needed? | <input type="checkbox"/> No |
| Cooler Temp: <u>4.9</u> | | 16. Are ESS labels on correct containers? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Iced With: <u>Ice</u> | | 17. Were samples received intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Was COC included with samples? | <input type="checkbox"/> Yes | ESS Sample IDs: _____ | |
| 7. Was COC signed and dated by client? | <input type="checkbox"/> Yes | Sub Lab: _____ | |
| 8. Does the COC match the sample | <input type="checkbox"/> Yes | Analysis: _____ | |
| 9. Is COC complete and correct? | <input type="checkbox"/> Yes | TAT: _____ | |
| 18. Was there need to call project manager to discuss status? If yes, please explain. | | | |

Re-log of 1405632-03, -05, -10, -11, -14
at 6/11/14

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 8 oz Soil Jar | 1 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 8 oz Soil Jar | 1 | NP |
| 3 | Yes | 40 ml - VOA | 1 | MeOH |
| 3 | Yes | 8 oz Soil Jar | 1 | NP |
| 4 | Yes | 40 ml - VOA | 1 | MeOH |
| 4 | Yes | 8 oz Soil Jar | 1 | NP |
| 5 | Yes | 40 ml - VOA | 1 | MeOH |

Completed By: [Signature] Date/Time: 6/4/14 1440
Reviewed By: [Signature] Date/Time: 6/14/14 1455

1406074

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 2

| | | |
|---|--|-------------------------------|
| Turn Time <input checked="" type="checkbox"/> Standard Other _____ If faster than 5 days, prior approval by laboratory is required # _____ | Reporting Limits RMBM POC | ESS LAB PROJECT ID 1405632 |
| State where samples were collected from: MA (R) CT NH NJ NY ME Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ | |
| Is this project for any of the following: MA-MCP Navy USACE Other _____ | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ | |

| Co. Name GEA | | Project # 33551 | | Project Name (20 Char. or less) 642 HILLERS AVENUE | | Write Required Analysis | | | | | | | | | | | | | |
|----------------------------------|--------------------|--------------------------|------|---|--------|--|---------------|----------------------|--------------------|--------------|--------------|--------------|--------------|----------------|--|-------------|--|----------------|--|
| Contact Person MEG KILPATRICK | | Address 530 BLOOM WAY | | City PROVIDENCE | | State RI | | Zip 02909 | | PO# | | | | | | | | | |
| Telephone # 401-421-4140 | | Fax # | | Email Address MKilpatrick@gea.com | | Number of Containers | | Type of Containers | | VOLs | | PAHS | | TPH | | PFAS METALS | | TOTAL CHLORINE | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | VOLs | PAHS | TPH | PFAS METALS | TOTAL CHLORINE | | | | | |
| 1 | 5/28/14 | 9:50 | | | | GE-3150 S-1 | Y6 | 2 | 5% | X | X | X | X | X | | | | | |
| 2 | | 9:40 | | | | GE-3150 S-2 | | | | | | | | | | | | | |
| ① 3 | | 9:50 | | | | GE-3150 S-3 | | | | | | | | | | | | | |
| 4 | | 11:10 | | | | GE-3100 S-1 | | | | | | | | | | | | | |
| ② 5 | | 11:20 | | | | GE-3100 S-2 | | | | | | | | | | | | | |
| 6 | | 12:15 | | | | VHB-8K S-1 | | | | | | | | | | | | | |
| 7 | | 12:30 | | | | VHB-8K S-2 | | | | | | | | | | | | | |
| 8 | | 13:20 | | | | GE-3200 S-1 | | | | | | | | | | | | | |
| 9 | | 13:45 | | | | GE-3200 S-2 | | | | | | | | | | | | | |
| ③ 10 | 6/11/14 | 13:45 | | | | GE-3200 S-3 | | | | | | | | | | | | | |

All Hold
 Perchem
 6/13/14

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present Yes No Internal Use Only _____
 Seals Intact Yes No NA: [] Pickup
 Cooler Temp: 4.9°C [] Technicians _____
 Preservation Code 1- NP, 2- HCl, 3- H₂SO₄, 4- HNO₃, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____
 Sampled by: BILL FORTUNE / SOPHIA NARXIEWICZ
 Comments: ~~Hold for samples~~ NMRP RATES APPLY

| | | | | | | | |
|--|---------------------------|--|---------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <i>[Signature]</i> | Date/Time 5/25/14 1500 | Received by: (Signature) <i>[Signature]</i> | Date/Time 5/28/14 1500 | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A
 Please fax all changes to Chain of Custody in writing.
 1 (White) Lab Copy 2 (Yellow) Client Receipt
 10/26/04 A

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1406074

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 2 of 2

| | | | |
|--|--|--|--------------------------------------|
| Turn Time If faster than 5 days, prior approval by laboratory is required # | Standard <input checked="" type="checkbox"/> Other _____ | Reporting Limits FIDEM EDEL | ESS LAB PROJECT ID <u>1405032</u> |
| State where samples were collected from: MA <input checked="" type="checkbox"/> RI <input checked="" type="checkbox"/> CT NH NJ NY ME Other _____ | Is this project for any of the following: MA-MCP Navy USACE Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ | |
| | | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ | |

CS
6/4/14

| Co. Name 6ZA | | Project # 37554 | | Project Name (20 Char. or less) 042 ALPENS AVENUE | | Write Required Analysis | | | | | | | | | | | | | | |
|-------------------------------------|----------------|-------------------------------|------|---|----------|--|------------|----------------------|-------------------------------------|----------|----------|------------|------------|--------------|--------------|--|--|--|--|--|
| Contact Person M. PATRICK | | Address 530 BRADWAY | | | | | | | | | | | | | | | | | | |
| City PROVIDENCE | | State RI | | Zip 02909 | | PO# | | | | | | | | | | | | | | |
| Telephone # 401-421-4146 | | Fax # | | Email Address MLPatrick@6za.com | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | TPH | BIPOM | VOL% B2606 | PAHs B2706 | PP-13 METALS | TOTAL CYN/ML | | | | | |
| 11 | 5/28/14 | 8:00 | | | S | BD-052814 | 1/6 | 2 | <input checked="" type="checkbox"/> | X | X | X | X | X | | | | | | |
| 12 | ↓ | 11:30 | | | | DE-3030 S-1 | | | | | | | | | | | | | | |
| 13 | ↓ | 9:30 | | | | 62-3040 S-1 | | | | | | | | | | | | | | |
| 14 | ↓ | 8:00 | | | | TAIP BLANK - 52814 | 6 | 1 | <input checked="" type="checkbox"/> | | | | | | | | | | | |

④
⑤

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present Yes No Internal Use Only _____

Seals Intact Yes No NA: _____ [] Pickup

Cooler Temp: **4.9° ice** **5/28/14** [] Technicians _____

Preservation Code 1- NP, 2- HCl, 3- H₂SO₄, 4- HNO₃, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____

Sampled by: **SOPIA NARCIWICZ WILLIAM FORTUNE**

Comments: **NB: 10 LATES APPLY HOLD ALL SAMPLES**

| | | | | | | | |
|--|----------------------------------|--|----------------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <i>[Signature]</i> | Date/Time 5/28/14 1230 | Received by: (Signature) <i>[Signature]</i> | Date/Time 5/28/14 1500 | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt



CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554)
ESS Laboratory Work Order Number: 1407013

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 1:58 pm, Jul 09, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1407013

SAMPLE RECEIPT

The following samples were received on July 01, 2014 for the analyses specified on the enclosed Chain of Custody Record.

| Lab Number | Sample Name | Matrix | Analysis |
|-------------------|--------------------|---------------|-------------------------|
| 1407013-01 | SS-309 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-02 | SS-308 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-03 | SS-307 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-04 | SS-310 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-05 | SS-304 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-06 | SS-305 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-07 | SS-303 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-08 | SS-302 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-09 | SS-301 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-10 | SS-306 0-1ft | Soil | 1311, 1311/6010B, 6010B |
| 1407013-11 | BD 070114 | Soil | 1311, 1311/6010B, 6010B |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1407013

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1407013

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-309 0-1ft
Date Sampled: 07/01/14 08:25
Percent Solids: 95

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-01
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 12.6 (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 0:30 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-309 0-1ft
Date Sampled: 07/01/14 08:25
Percent Solids: 95

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 4490 (88.8) | | 6010B | | 20 | KJK | 07/03/14 18:32 | 2.37 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-309 0-1ft
Date Sampled: 07/01/14 08:25
Percent Solids: 95
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-01
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-308 0-1ft
Date Sampled: 07/01/14 08:42
Percent Solids: 95

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-02
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 36.0 (0.250) | | 1311/6010B | | 5 | NAR | 07/07/14 18:46 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-308 0-1ft
Date Sampled: 07/01/14 08:42
Percent Solids: 95

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 5650 (89.0) | | 6010B | | 20 | KJK | 07/03/14 18:36 | 2.37 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-308 0-1ft
Date Sampled: 07/01/14 08:42
Percent Solids: 95
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-02
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-307 0-1ft
Date Sampled: 07/01/14 09:02
Percent Solids: 96

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-03
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 4.75 (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 1:21 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-307 0-1ft
Date Sampled: 07/01/14 09:02
Percent Solids: 96

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 1390 (21.3) | | 6010B | | 5 | KJK | 07/03/14 18:40 | 2.45 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-307 0-1ft
Date Sampled: 07/01/14 09:02
Percent Solids: 96
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-03
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-310 0-1ft
Date Sampled: 07/01/14 09:20
Percent Solids: 97

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-04
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 16.7 (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 1:25 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-310 0-1ft
Date Sampled: 07/01/14 09:20
Percent Solids: 97

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 2880 (41.5) | | 6010B | | 10 | KJK | 07/03/14 18:45 | 2.47 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-310 0-1ft
Date Sampled: 07/01/14 09:20
Percent Solids: 97
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-04
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-304 0-1ft
Date Sampled: 07/01/14 09:40
Percent Solids: 96

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-05
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 11.5 (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 1:30 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-304 0-1ft
Date Sampled: 07/01/14 09:40
Percent Solids: 96

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 448 (12.9) | | 6010B | | 3 | KJK | 07/03/14 18:49 | 2.43 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-304 0-1ft
Date Sampled: 07/01/14 09:40
Percent Solids: 96
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-05
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-305 0-1ft
Date Sampled: 07/01/14 09:55
Percent Solids: 97

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-06
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 3.35 (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 1:34 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-305 0-1ft
Date Sampled: 07/01/14 09:55
Percent Solids: 97

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-06
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 1610 (20.9) | | 6010B | | 5 | KJK | 07/03/14 18:54 | 2.47 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-305 0-1ft
Date Sampled: 07/01/14 09:55
Percent Solids: 97
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-06
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-303 0-1ft
Date Sampled: 07/01/14 10:05
Percent Solids: 93

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-07
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 5.12 (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 1:40 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-303 0-1ft
Date Sampled: 07/01/14 10:05
Percent Solids: 93

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-07
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 2040 (23.1) | | 6010B | | 5 | KJK | 07/03/14 18:58 | 2.32 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-303 0-1ft
Date Sampled: 07/01/14 10:05
Percent Solids: 93
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-07
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-302 0-1ft
Date Sampled: 07/01/14 11:05
Percent Solids: 97

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-08
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 4.42 (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 1:44 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-302 0-1ft
Date Sampled: 07/01/14 11:05
Percent Solids: 97

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-08
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 2090 (42.2) | | 6010B | | 10 | KJK | 07/03/14 19:02 | 2.45 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-302 0-1ft
Date Sampled: 07/01/14 11:05
Percent Solids: 97
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-08
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-301 0-1ft
Date Sampled: 07/01/14 11:15
Percent Solids: 96

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-09
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | ND (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 1:50 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-301 0-1ft
Date Sampled: 07/01/14 11:15
Percent Solids: 96

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-09
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | ND (4.4) | | 6010B | | 1 | KJK | 07/03/14 19:06 | 2.34 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-301 0-1ft
Date Sampled: 07/01/14 11:15
Percent Solids: 96
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-09
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-306 0-1ft
Date Sampled: 07/01/14 11:25
Percent Solids: 92

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-10
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | ND (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 1:54 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-306 0-1ft
Date Sampled: 07/01/14 11:25
Percent Solids: 92

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-10
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | ND (4.4) | | 6010B | | 1 | KJK | 07/03/14 19:24 | 2.46 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-306 0-1ft
Date Sampled: 07/01/14 11:25
Percent Solids: 92
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-10
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD 070114
Date Sampled: 07/01/14 08:00
Percent Solids: 91

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-11
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

TCLP Extraction Date: 7/2/14 16:23

1311 TCLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>TCLP Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|-------------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | ND (0.050) | | 1311/6010B | | 1 | NAR | 07/04/14 1:58 | 50 | 50 | CG40226 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD 070114
Date Sampled: 07/01/14 08:00
Percent Solids: 91

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-11
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | ND (4.5) | | 6010B | | 1 | KJK | 07/03/14 19:28 | 2.41 | 100 | CG40137 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: BD 070114
Date Sampled: 07/01/14 08:00
Percent Solids: 91
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1407013
ESS Laboratory Sample ID: 1407013-11
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 7/2/14 16:23

TCLP Extraction by 1311

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 21.0 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Max C) | 23.5 (N/A) | | 1311 | | 1 | NAR | 07/03/14 8:59 | CG40240 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1407013

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
|---------|--------|-----|-------|-------------|---------------|------|-------------|-----|-----------|-----------|

1311 TCLP Metals

Batch CG40226 - 3005A_TCLP

Blank

| | | | | | | | | | | |
|------|----|-------|------|--|--|--|--|--|--|--|
| Lead | ND | 0.050 | mg/L | | | | | | | |
|------|----|-------|------|--|--|--|--|--|--|--|

LCS

| | | | | | | | | | | |
|------|-------|-------|------|--------|--|-----|--------|--|--|--|
| Lead | 0.540 | 0.050 | mg/L | 0.5000 | | 108 | 80-120 | | | |
|------|-------|-------|------|--------|--|-----|--------|--|--|--|

LCS Dup

| | | | | | | | | | | |
|------|-------|-------|------|--------|--|-----|--------|---|----|--|
| Lead | 0.560 | 0.050 | mg/L | 0.5000 | | 112 | 80-120 | 4 | 20 | |
|------|-------|-------|------|--------|--|-----|--------|---|----|--|

Total Metals Solid

Batch CG40137 - 3050B

Blank

| | | | | | | | | | | |
|------|----|-----|-----------|--|--|--|--|--|--|--|
| Lead | ND | 5.0 | mg/kg wet | | | | | | | |
|------|----|-----|-----------|--|--|--|--|--|--|--|

LCS

| | | | | | | | | | | |
|------|------|------|-----------|-------|--|----|--------|--|--|--|
| Lead | 84.1 | 15.4 | mg/kg wet | 97.90 | | 86 | 80-120 | | | |
|------|------|------|-----------|-------|--|----|--------|--|--|--|

LCS Dup

| | | | | | | | | | | |
|------|------|------|-----------|-------|--|----|--------|---|----|--|
| Lead | 86.2 | 16.7 | mg/kg wet | 97.90 | | 88 | 80-120 | 3 | 20 | |
|------|------|------|-----------|-------|--|----|--------|---|----|--|



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1407013

Notes and Definitions

- Z17 Temperature is within 23 +/-2 °C.
- U Analyte included in the analysis, but not detected
- D Diluted.
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1407013

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01

<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.

ESS Project ID: 14070013

Client Project ID: _____

Date Project Due: ~~7/8/14~~ 7/9/14 cmt

Shipped/Delivered Via: ~~ESS Courier~~ Client

Days For Project: 5 Day

Items to be checked upon receipt:

7/2/14 @ ESS

1. Air Bill Manifest Present?

* No

10. Are the samples properly preserved?

Yes

Air No.:

11. Proper sample containers used?

Yes

2. Were Custody Seals Present?

No

12. Any air bubbles in the VOA vials?

N/A

3. Were Custody Seals Intact?

N/A

13. Holding times exceeded?

No

4. Is Radiation count < 100 CPM?

Yes

14. Sufficient sample volumes?

Yes

5. Is a cooler present?

Yes

15. Any Subcontracting needed?

No

Cooler Temp: 1.0

16. Are ESS labels on correct containers?

Yes No

Iced With: Ice

17. Were samples received intact?

Yes No

6. Was COC included with samples?

Yes

ESS Sample IDs: _____

7. Was COC signed and dated by client?

Yes

Sub Lab: _____

8. Does the COC match the sample

Yes

Analysis: _____

9. Is COC complete and correct?

Yes

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

Who was called?: _____

By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 8 oz Soil Jar | 1 | NP |
| 2 | Yes | 8 oz Soil Jar | 1 | NP |
| 3 | Yes | 8 oz Soil Jar | 1 | NP |
| 4 | Yes | 8 oz Soil Jar | 1 | NP |
| 5 | Yes | 8 oz Soil Jar | 1 | NP |
| 6 | Yes | 8 oz Soil Jar | 1 | NP |
| 7 | Yes | 8 oz Soil Jar | 1 | NP |
| 8 | Yes | 8 oz Soil Jar | 1 | NP |
| 9 | Yes | 8 oz Soil Jar | 1 | NP |
| 10 | Yes | 8 oz Soil Jar | 1 | NP |
| 11 | Yes | 8 oz Soil Jar | 1 | NP |

Completed By: [Signature]

Date/Time: 7/1/14 1427

Reviewed By: [Signature]

Date/Time: 7/1/14 1455

ESS Laboratory

Division of Thielsch Engineering, Inc.

185 Frances Avenue, Cranston, RI 02910-2211

Tel. (401) 461-7181 Fax (401) 461-4486

www.esslaboratory.com

CHAIN OF CUSTODY

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| | | |
|--|--|--------------------------------------|
| Turn Time <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other _____ If faster than 5 days, prior approval by laboratory is required # _____ | Reporting Limits <u>PEDEM RDEC</u> | ESS LAB PROJECT ID <u>1407013</u> |
| State where samples were collected from: MA <u>(RI)</u> CT NH NJ NY ME Other _____ | Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ | |
| Is this project for any of the following: MA-MCP <input checked="" type="checkbox"/> Navy <input type="checkbox"/> USACE <input type="checkbox"/> Other _____ | Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ | |

| Co. Name | | Project # | Project Name (20 Char. or less) | | Write Required Analysis | | | | | | | | | | | | | | | | | |
|--|---------------|--------------------------------|---------------------------------|---|-------------------------|--|---------------|-----------|----------------------|--------------------|------------|-----------|--|--|--|--|--|--|--|--|--|--|
| <u>GZA</u> | | <u>33554</u> | <u>612 ALLENS AVE</u> | | | | | | | | | | | | | | | | | | | |
| Contact Person <u>MARGARET KILPATRICK</u> | | Address <u>530 BROADWAY</u> | | | | | | | | | | | | | | | | | | | | |
| City <u>PROVIDENCE</u> | | State <u>RI</u> | Zip <u>02914</u> | PO# | | | | | | | | | | | | | | | | | | |
| Telephone # <u>401-421-4140</u> | | Fax # | | Email Address <u>mkilpatrick@gza.com</u> | | | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | | Pres Code | Number of Containers | Type of Containers | LEAD TOTAL | TCLP LEAD | | | | | | | | | | |
| <u>1</u> | <u>7/1/14</u> | <u>8:25</u> | | <u>X</u> | <u>S</u> | <u>SS-309</u> | <u>0-1 FT</u> | <u>1</u> | <u>1</u> | <u>G</u> | <u>X</u> | <u>X</u> | | | | | | | | | | |
| <u>2</u> | | <u>9:42</u> | | | | <u>SS-308</u> | <u>0-1 FT</u> | | | | | | | | | | | | | | | |
| <u>3</u> | | <u>9:02</u> | | | | <u>SS-307</u> | <u>0-1 FT</u> | | | | | | | | | | | | | | | |
| <u>4</u> | | <u>9:20</u> | | | | <u>SS-310</u> | <u>0-1 FT</u> | | | | | | | | | | | | | | | |
| <u>5</u> | | <u>9:40</u> | | | | <u>SS-304</u> | <u>0-1 FT</u> | | | | | | | | | | | | | | | |
| <u>6</u> | | <u>9:55</u> | | | | <u>SS-305</u> | <u>0-1 FT</u> | | | | | | | | | | | | | | | |
| <u>7</u> | | <u>10:05</u> | | | | <u>SS-303</u> | <u>0-1 FT</u> | | | | | | | | | | | | | | | |
| <u>8</u> | | <u>11:05</u> | | | | <u>SS-302</u> | <u>0-1 FT</u> | | | | | | | | | | | | | | | |
| <u>9</u> | | <u>11:15</u> | | | | <u>SS-301</u> | <u>0-1 FT</u> | | | | | | | | | | | | | | | |
| <u>10</u> | | <u>11:25</u> | | | | <u>SS-306</u> | <u>0-1 FT</u> | | | | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | | |
|--|--|--|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Internal Use Only | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No NA: _____ [] Pickup | Sampled by: <u>SOPHIA NAKIEWICZ</u> <u>EMIL BELOFF</u> | |
| Cooler Temp: <u>1.6° Bag Ice</u> [] Technicians _____ | Comments: <u>NO ID FATES APPLY</u> | |

| | | | | | | | |
|---|-------------------------------|---|-------------------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) <u>[Signature]</u> | Date/Time <u>7-1-14 12:45</u> | Received by: (Signature) <u>[Signature]</u> | Date/Time <u>7-1-14 12:45</u> | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

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| | |
|--|---|
| Turn Time <input checked="" type="checkbox"/> Standard Other _____ If faster than 5 days, prior approval by laboratory is required # _____ State where samples were collected from: MA <u>RI</u> CT NH NJ NY ME Other _____ Is this project for any of the following: MA-MCP Navy USACE Other _____ | Reporting Limits RPPM RDEC Electronic Deliverable Yes <input checked="" type="checkbox"/> No _____ Format: Excel <input checked="" type="checkbox"/> Access _____ PDF <input checked="" type="checkbox"/> Other _____ |
|--|---|

ESS LAB PROJECT ID
1407013

| | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|--------------------------------|--|---|------------|----------------------|--------------------|-------------------------|----------|--|-----------|--|--|--|--|--|--|--|--|--|--|--|--|
| Co. Name GZA | | Project # 53554 | Project Name (20 Char. or less) 692 ALLENS AVE | | | Number of Containers | Type of Containers | Write Required Analysis | | | | | | | | | | | | | | | |
| Contact Person MARGARET KILPATRICK | | Address 530 BROADWAY | | | TOTAL LEAD | | | TCL LEAD | | | | | | | | | | | | | | | |
| City PROVIDENCE | State RI | Zip 02909 | PO# | | | | | | | | | | | | | | | | | | | | |
| Telephone # 401-421-4140 | | Fax # | | Email Address mkilpatrick@gza.com | | | | | | | | | | | | | | | | | | | |
| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | | | | | MATRIX | Sample Identification (20 Char. or less) | Pres Code | | | | | | | | | | | | |
| 11 | 7/1/14 | 8:00 | | <input checked="" type="checkbox"/> | S | BD 070114 | 1 | 1 | 6 | X | X | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

| | | |
|--|---|--|
| Cooler Present <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Internal Use Only _____ | Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____ |
| Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No NA: _____ [] Pickup | Sampled by: SOPHIA NALKIEWICZ ELL BLOFF | |
| Cooler Temp: 16°C Bag Ice | <input checked="" type="checkbox"/> Technicians _____ | Comments: NO HD PATES APPLY |

| | | | | | | | |
|------------------------------|---------------------|--------------------------|---------------------|------------------------------|-----------|--------------------------|-----------|
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| | 7-1-14 12:45 | | 7-1-14 12:45 | | | | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

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CERTIFICATE OF ANALYSIS

Meg Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, RI 02909

RE: 642 Allens Ave (03.0033554)
ESS Laboratory Work Order Number: 1507459

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 4:15 pm, Jul 27, 2015

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1507459

SAMPLE RECEIPT

The following samples were received on July 20, 2015 for the analyses specified on the enclosed Chain of Custody Record.

| Lab Number | Sample Name | Matrix | Analysis |
|-------------------|--------------------|---------------|------------------|
| 1507459-01 | SS-308 | Soil | 1312, 1312/6010B |
| 1507459-02 | SS-309 | Soil | 1312, 1312/6010B |
| 1507459-03 | SS-310 | Soil | 1312, 1312/6010B |
| 1507459-04 | SS-304 | Soil | 1312, 1312/6010B |
| 1507459-05 | SS-303 | Soil | 1312, 1312/6010B |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1507459

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1507459

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015D - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH / VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-308
Date Sampled: 07/20/15 10:00
Percent Solids: N/A

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-01
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1312 SPLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 0.843 (0.010) | | 1312/6010B | | 1 | KJK | 07/23/15 12:10 | 50 | 25 | CG52141 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-308
Date Sampled: 07/20/15 10:00
Percent Solids: N/A
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1312

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-01
Sample Matrix: Soil
Units: °C
Analyst: BJV
Prepared: 7/21/15 16:14

SPLP Extraction by 1312

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 22.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Max C) | 24.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-309
Date Sampled: 07/20/15 10:10
Percent Solids: N/A

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-02
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1312 SPLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 0.531 (0.010) | | 1312/6010B | | 1 | KJK | 07/23/15 12:14 | 50 | 25 | CG52141 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-309
Date Sampled: 07/20/15 10:10
Percent Solids: N/A
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1312

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-02
Sample Matrix: Soil
Units: °C
Analyst: BJV
Prepared: 7/21/15 16:14

SPLP Extraction by 1312

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 22.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Max C) | 24.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-310
Date Sampled: 07/20/15 10:20
Percent Solids: N/A

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-03
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1312 SPLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 2.93 (0.010) | | 1312/6010B | | 1 | KJK | 07/23/15 12:30 | 50 | 25 | CG52141 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-310
Date Sampled: 07/20/15 10:20
Percent Solids: N/A
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1312

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-03
Sample Matrix: Soil
Units: °C
Analyst: BJV
Prepared: 7/21/15 16:14

SPLP Extraction by 1312

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 22.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Max C) | 24.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-304
Date Sampled: 07/20/15 10:30
Percent Solids: N/A

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-04
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1312 SPLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 0.232 (0.010) | | 1312/6010B | | 1 | KJK | 07/23/15 12:35 | 50 | 25 | CG52141 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-304
Date Sampled: 07/20/15 10:30
Percent Solids: N/A
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1312

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-04
Sample Matrix: Soil
Units: °C
Analyst: BJV
Prepared: 7/21/15 16:14

SPLP Extraction by 1312

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 22.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Max C) | 24.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-303
Date Sampled: 07/20/15 10:40
Percent Solids: N/A

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-05
Sample Matrix: Soil
Units: mg/L

Extraction Method: 3005A TCLP

1312 SPLP Metals

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>I/V</u> | <u>F/V</u> | <u>Batch</u> |
|----------------|----------------------|------------|---------------|--------------|-----------|----------------|-----------------|------------|------------|--------------|
| Lead | 0.564 (0.010) | | 1312/6010B | | 1 | KJK | 07/23/15 12:39 | 50 | 25 | CG52141 |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave
Client Sample ID: SS-303
Date Sampled: 07/20/15 10:40
Percent Solids: N/A
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1312

ESS Laboratory Work Order: 1507459
ESS Laboratory Sample ID: 1507459-05
Sample Matrix: Soil
Units: °C
Analyst: BJV
Prepared: 7/21/15 16:14

SPLP Extraction by 1312

| <u>Analyte</u> | <u>Results (MRL)</u> | <u>MDL</u> | <u>Method</u> | <u>Limit</u> | <u>DF</u> | <u>Analyst</u> | <u>Analyzed</u> | <u>Batch</u> |
|---------------------|---|------------|---------------|--------------|-----------|----------------|-----------------|--------------|
| Temperature (Min C) | 22.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Max C) | 24.5 (N/A) | | 1312 | | 1 | BJV | 07/22/15 8:35 | CG52135 |
| Temperature (Range) | Temperature is within 23 +/-2 °C. (N/A) | | | | | | | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1507459

Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|-----------------------------------|--------|-------|-------|-------------|---------------|------|-------------|-----|-----------|-----------|
| 1312 SPLP Metals | | | | | | | | | | |
| Batch CG52141 - 3005A_TCLP | | | | | | | | | | |
| Blank | | | | | | | | | | |
| Lead | ND | 0.010 | mg/L | | | | | | | |
| Blank | | | | | | | | | | |
| Lead | ND | 0.010 | mg/L | | | | | | | |
| LCS | | | | | | | | | | |
| Lead | 0.227 | 0.010 | mg/L | 0.2500 | | 91 | 80-120 | | | |
| LCS Dup | | | | | | | | | | |
| Lead | 0.236 | 0.010 | mg/L | 0.2500 | | 94 | 80-120 | 4 | 20 | |



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1507459

Notes and Definitions

- Z17 Temperature is within 23 +/-2 °C.
- U Analyte included in the analysis, but not detected
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 642 Allens Ave

ESS Laboratory Work Order: 1507459

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 15070459
Date Project Due: 7/27/15
Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present? * No

Air No.:

2. Were Custody Seals Present? No

3. Were Custody Seals Intact? N/A

4. Is Radiation count < 100 CPM? Yes

5. Is a cooler present? Yes

Cooler Temp: 1.7

Iced With: Ice

6. Was COC included with samples? Yes

7. Was COC signed and dated by client? Yes

8. Does the COC match the sample Yes

9. Is COC complete and correct? Yes

10. Are the samples properly preserved? Yes

11. Proper sample containers used? Yes

12. Any air bubbles in the VOA vials? N/A

13. Holding times exceeded? No

14. Sufficient sample volumes? Yes

15. Any Subcontracting needed? No

16. Are ESS labels on correct containers? Yes No

17. Were samples received intact? Yes No

ESS Sample IDs: _____

Sub Lab: _____

Analysis: _____

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

Who was called?: _____

By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---------------|--------------------|----------------|-----------------|--------------|
| 1 | Yes | 8 oz Soil Jar | 1 | NP |
| 2 | Yes | 8 oz Soil Jar | 1 | NP |
| 3 | Yes | 8 oz Soil Jar | 1 | NP |
| 4 | Yes | 8 oz Soil Jar | 1 | NP |
| 5 | Yes | 8 oz Soil Jar | 1 | NP |

Completed By: [Signature]

Date/Time: 7/20/15 1450

Reviewed By: [Signature]

Date/Time: 7/20/15 1455



APPENDIX N

SUMMARY OF SOIL QA/QC RESULTS



Appendix N

Summary of QA/QC Results
642 Allens Avenue Former MGP
Providence, Rhode Island

All sample collection, handling, storage, field screening methods, transportation, and analyses were conducted in general accordance with the *SSIWP* to ensure that results are accurate and representative. In addition and as described below, in accordance with the *SSIWP*, GZA collected and analyzed field duplicate samples and trip blanks.

Upon receipt, GZA audited the analytical data to assess whether the analytical data met the data quality objectives of the project. This audit included evaluation of QA/QC samples (*e.g.*, Lab Control Samples/Lab Control Sample Duplicates, Method Blanks, Field Blanks, and Field Duplicates) to evaluate the representativeness, comparability, completeness, precision, accuracy, and sensitivity of the analytical data.

The results of this audit by laboratory data package generally indicated the following:

- Chloroform and to a lesser extent methylene chloride, common laboratory contaminants, were detected in the method blanks associated with laboratory work orders 1405486, 1405553, 1406074, 1405579, 1405585, 1405662, 1405485, and 1405669. Based on the new quantitation limits for acetone and methylene chloride, the positive results in all of the samples have been qualified as non-detects. The table below has been prepared to qualify the detections.

| Work Order No. and Batch | Analyte and Concentration Detected in Method Blank | New Quantitation Limit | Samples Effected and Lab Reported Detected Value | Action |
|--------------------------|--|------------------------|---|--|
| 1405486 | | | | |
| Batch CE42715 | Chloroform (0.017 mg/kg) | 0.17 mg/kg | GZ-321S S-2 (0.0119 mg/kg) GZ-322S S-2 (0.0205 mg/kg) GZ-323S S-3 (0.013 mg/kg) TripBlank52014 (0.016 mg/kg) | Mark as ND with DL of 0.0395 mg/kg Mark as ND with DL of 0.057 mg/kg Mark as ND with DL of 0.0361 mg/kg Mark as ND with DL of 0.05 mg/kg |
| Batch CE42730 | Chloroform (0.013 mg/kg) | 0.13 mg/kg | BD-052015 (0.0307 mg/kg) | Mark as ND with DL of 0.0809 mg/kg |
| 1405553 | | | | |
| Batch CE42730 | Chloroform (0.013 mg/kg) | 0.13 mg/kg | GZ-311D S-2 (0.0166 mg/kg) GZ-313D S-3 (0.0152 mg/kg) BD051914 (0.0149 mg/kg) | Mark as ND with DL of 0.049 mg/kg Mark as ND with DL of 0.0423 mg/kg Mark as ND with DL of 0.0415 mg/kg |
| 1406074 | | | | |
| Batch CF40934 | Chloroform (0.017 mg/kg) | 0.17 mg/kg | GZ-315D S-3 (0.0159 mg/kg) GZ-320D S-3 (0.0142 mg/kg) BD-052814 (0.0393 mg/kg) TripBlank52814 (0.021 mg/kg) | Mark as ND with DL of 0.0419 mg/kg Mark as ND with DL of 0.0418 mg/kg Mark as ND with DL of 0.0393 mg/kg Mark as ND with DL of 0.05 mg/kg |
| Batch CF41114 | Chloroform (0.016 mg/kg) | 0.16 mg/kg | | None |
| 1405579 | | | | |



Appendix N

Summary of QA/QC Results
642 Allens Avenue Former MGP
Providence, Rhode Island

| Work Order No. and Batch | Analyte and Concentration Detected in Method Blank | New Quantitation Limit | Samples Effected and Lab Reported Detected Value | Action |
|--------------------------|--|------------------------|--|--|
| Batch CE43040 | Chloroform (0.025 mg/kg) | 0.25 mg/kg | GZ-306S S-2 (0.0291 mg/kg) GZ-304D S-2 (0.0242 mg/kg) TripBlank (0.023 mg/kg) | Mark as ND with DL of 0.0765 mg/kg Mark as ND with DL of 0.0605 mg/kg Mark as ND with DL of 0.05 mg/kg |
| | Methylene Chloride (0.28 mg/kg) | 0.28 mg/kg | | None |
| Batch CF40332 | Chloroform (0.02 mg/kg) | 0.2 mg/kg | GZ-305S S-1B (0.0168 mg/kg) | Mark as ND with DL of 0.0561 mg/kg |
| 1405585 | | | | |
| Batch CE43040 | Chloroform (0.025 mg/kg) | 0.25 mg/kg | GZ-303D S-3 (0.0229 mg/kg) GZ-302D S-3 (0.0146 mg/kg) GZ-301D S-3 (0.0224 mg/kg) TripBlank52214 (0.021 mg/kg) | Mark as ND with DL of 0.0394 mg/kg Mark as ND with DL of 0.0348 mg/kg Mark as ND with DL of 0.0588 mg/kg Mark as ND with DL of 0.05 mg/kg |
| | Methylene Chloride (0.28 mg/kg) | 0.28 mg/kg | | None |
| 1405662 | | | | |
| Batch CF40243 | Chloroform (0.014 mg/kg) | 0.14 mg/kg | GZ-312D S-2 (0.0169 mg/kg) GZ-318D S-3 (0.0157 mg/kg) GZ-317D S-2 (0.0116 mg/kg) TripBlank52314 (0.015 mg/kg) | Mark as ND with DL of 0.0564 mg/kg Mark as ND with DL of 0.0435 mg/kg Mark as ND with DL of 0.0386 mg/kg Mark as ND with DL of 0.05 mg/kg |
| 1405485 | | | | |
| Batch CE42715 | Chloroform (0.017 mg/kg) | 0.17 mg/kg | GZ-308S S-2 (0.0209 mg/kg) GZ-309D S-3 (0.0132 mg/kg) TripBlank51914 (0.018 mg/kg) | Mark as ND with DL of 0.0579 mg/kg Mark as ND with DL of 0.0471 mg/kg Mark as ND with DL of 0.05 mg/kg |
| Batch CE42730 | Chloroform (0.013 mg/kg) | 0.13 mg/kg | GZ-307S S-3 (0.0211 mg/kg) | Mark as ND with DL of 0.0587 mg/kg |
| 1405669 | | | | |
| Batch CF40243 | Chloroform (0.014 mg/kg) | 0.14 mg/kg | GZ-314D S-3 (0.0112 mg/kg) TripBlank (0.018 mg/kg) | Mark as ND with DL of 0.035 mg/kg Mark as ND with DL of 0.05 mg/kg |
| Batch CF40332 | Chloroform (0.02 mg/kg) | 0.2 mg/kg | GZ-319D S-3 (0.0086 mg/kg) | Mark as ND with DL of 0.0308 mg/kg |



Appendix N

Summary of QA/QC Results
 642 Allens Avenue Former MGP
 Providence, Rhode Island

- Besides the chloroform detected in trip blanks (as noted above), VOCs were not detected in the 7 trip blanks that accompanied the soil samples, suggesting cross contamination was not an issue during soil sampling handling and transportation activities.
- Blank spike recoveries were slightly above the acceptance range for acetone and the data should be considered to have a high bias. Acetone has not been identified as a contaminant of concern at the Site. Thus, GZA considers the acetone data to be acceptable.
- Matrix effects in two soil samples (GZ-317D S-2 and GZ-319D S-3) caused high VOC internal standard recoveries. Analytes that were detected in sample GZ-317D S-2 should be considered to be biased high: 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Benzene, Ethylbenzene, Naphthalene, n-Butylbenzene, Toluene and xylenes. Analytes were not detected in sample GZ-317D S-2 that would be qualified based on these high internal standard recoveries. As the data is reported with a high bias, no qualifier is applied.
- The standard reference material standard for silver was detected outside of the criteria in Batch CE42308 (samples GZ-321S S-2 (0.55 mg/kg), GZ-322S S-2 (0.81 mg/kg), GZ-323S S-2 (0.62 mg/kg), GZ-324 S-2 (0.5 mg/kg), BD-052014 (ND), GZ-307S S-3 (0.49 mg/kg), GZ-308S S-2 (ND), and GZ-309D S-3 (ND)). The standard was detected below the criteria which could lead to a low bias for detections. Thus, non-detects and positive results should be considered estimated values and will be marked with a “J” qualifier in the data tables.
- Blank spike recoveries were slightly below the acceptable range for WO 1406074 Batch CF40906 (GZ-315D S-3, GZ-310D S-2, GZ-320D S-3, and BD-052814) for antimony, beryllium, lead and zinc. There is a possibility for these analytes to be reported with a low bias. The below table presents a summary of these metals results. Thus, non-detects and positive results should be considered estimated values and will be marked with a “J” qualifier in the data tables.

| Analyte (mg/kg) | RIDEM I/C-DEC | RIDEM GB Leachability Criteria | RIDEM UCL | GZ-315D S-3 | GZ-310D S-2 | GZ-320D S-3 | BD-052814 |
|-----------------|---------------|--------------------------------|-----------|-------------|-------------|-------------|-----------|
| Antimony | 820 | NE | 10,000 | 8.7 J | <5.0 J | <4.6 J | <4.7 J |
| Beryllium | 1.3 | NE | 10,000 | 0.35 J | 0.3 J | 0.22 J | 0.29 J |
| Lead | 500 | NE | 10,000 | 299 J | 79.3 J | 34.2 J | 41.9 J |
| Zinc | 10,000 | NE | 10,000 | 46.4 J | 128 J | 24.8 J | 43.6 J |

- The Relative Percent Difference (RPD) value for the lab control sample and sample duplicate prepared for metals batch CF40906 exceeded the acceptance criteria of 20 percent for antimony. Thus, positive results and non-detects for antimony should be considered estimated values for batch CF40906 samples GZ-315D S-3, GZ-310D S-2, GZ-320D S-3, and BD-052814. Thus, non-detects and positive results should be considered estimated values and will be marked with a “J” qualifier in the data tables.
- Continuing calibration recovery was detected at very slightly above the acceptable range for a surrogate of TPH (triacontane) for WO 1406074. The data is considered to have a high bias. As the data is reported with a high bias, no qualifier is applied.
- The SVOC analytical results for certain soil samples and SVOC surrogate recoveries in certain laboratory results were calculated from sample dilutions due to elevated contaminant concentrations within the associated soil sample. The analytical results of these diluted samples (flagged with a D) were often above the reporting limit; however, these soil samples contained elevated concentrations of Site constituents of concern above the applicable regulatory criteria and



Appendix N

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therefore the elevated reporting limits in these samples does not affect data usability. Reporting limits which exceed the corresponding RIDEM criteria are indicated by blue text on the analytical tables.

- The analytical result for several SVOCs including hexachlorocyclopentadiene, 2,4-Dinitrophenol, Pentachlorophenol, Benzoic Acid and 4-Chloroaniline were potentially biased due to either low lab control sample/surrogate recoveries or calibration issues. These SVOC compounds are not expected to be Site COCs; therefore this potential bias does not affect data usability.
- Four duplicate sample sets were submitted for analysis to evaluate sample reproducibility. The RPD was calculated for each compound. Results were varied, which is typical for soil samples of this nature, with some compounds falling within the RPD range and many exceeding the RPD. Some compounds showed better reproducibility than others. This is likely due to the non-homogeneous nature of the soil, particularly the fill, and the irregular distribution of contaminants. To evaluate the data conservatively, the higher results from each sample and duplicate set should be used for decision-making purposes.



APPENDIX O

NEW FIELDS CHEMICAL FINGERPRINTING RESULTS



May 25, 2012

Ms. Margaret Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, Rhode Island 02909

Subject: Chemical Fingerprinting at National Grid's 642 Allens Avenue Site

Dear Ms. Kilpatrick,

NewFields is pleased to provide you with this letter report, summarizing the results of the analyses conducted on samples collected from the National Grid's facility located at 642 Allens Avenue in Providence, Rhode Island (the Site). The objective of this study was to chemically characterize hydrocarbon residues in the various matrices, identify the type(s) of petroleum products that compose the hydrocarbons, and to determine the degree of environmental weathering.

Sample Summary

Several samples were collected periodically between February 24, 2012 and March 7, 2012. After collection, samples were stored in a secure location on ice and shipped by courier to NewFields' alliance laboratory, Alpha Analytical Laboratory (Alpha). Samples were received intact and in good condition, with some minor exceptions. Extra sample containers were received that were not documented on the chain-of-custody and three vials received were not labeled. GZA GeoEnvironmental, Inc. (GZA) was notified and clarified the labeling issue. These minor exceptions should have little effect on the intended use or interpretation of the data. Upon receipt, the samples were logged into Alpha's laboratory information management system (LIMS) and given unique laboratory identifications. The samples were stored in a limited access refrigerator 4°C until processed by the laboratory staff for chemical fingerprinting analysis. A summary of the samples collected is provided below. Chain-of-custody documentation is provided in Attachment 1.

| Client ID | Matrix | Date Collected | Date Received |
|---------------------|---------------|-----------------------|----------------------|
| CB#1 | Sheen | 03/07/2012 | 03/09/2012 |
| CB#2 | Sheen | 03/07/2012 | 03/09/2012 |
| Parking Lot CB | Sheen | 02/24/2012 | 02/28/2012 |
| Parking Lot CB | Sediment | 02/24/2012 | 02/28/2012 |
| Parking Lot CB | Water | 02/24/2012 | 02/28/2012 |
| Oil Water Separator | Sheen | 02/24/2012 | 02/28/2012 |
| Oil Water Separator | Water | 02/24/2012 | 02/28/2012 |

CB#1 and CB#2 were collected from catch basins where sheens have been observed historically, located along the northwestern boundary of the property. The three samples identified as Parking Lot CB were taken of sheen, sediment on the wall, and water from Catch Basin 1, respectively. The samples identified as Oil Water Separator (sheen and water) were collected from the oil water separator on-Site. The locations of where the samples were collected are shown on the site map provided by GZA (Figure 1).

Sample Analysis

Water samples were extracted for detailed hydrocarbon analysis by spiking a 1-L portion of the sample with surrogate internal standards (SIS) and serially extracting three times with dichloromethane (DCM). The combined extracts were dried over sodium sulfate, concentrated to an appropriate, and spiked with internal standards (IS). Sediment and sheen samples were treated as oil samples and were prepared for analysis as such. A measured portion of the sample was diluted with dichloromethane (DCM), passed through a glass fiber filter with sodium sulfate, and spiked with SIS and IS. Sample extracts were submitted for instrumental analysis.

Samples were analyzed using laboratory methods tailored for the forensic analysis of petroleum described by Douglas et.al. (2007)¹:

- *Total Petroleum Hydrocarbons (TPH) and Fingerprinting*: a modified EPA Method 8015B gas chromatography method was used to determine the total petroleum hydrocarbon (TPH) concentrations (C₈-C₄₄). A high resolution gas chromatogram produced by this method provides a detailed “fingerprint” of the hydrocarbons that compose samples. This analysis allowed for the characterization of the general boiling range(s) and type(s) of petroleum or other hydrocarbons present in the sample, as well as the degree(s) of weathering a fugitive product has undergone in the environment.
- *Polycyclic Aromatic Hydrocarbons (PAH) and Petroleum Biomarker Quantification and Fingerprinting*: a modified EPA Method 8270C gas chromatography/mass spectrometry (GC/MS-SIM) method was used to determine the concentrations of semi-volatile compounds or compound groups, including parent and alkylated PAH, sulfur-containing aromatics (dibenzothiophenes), and other compounds that provide specific information regarding the origin/source of PAHs and type(s) of hydrocarbons found in the samples. Tables 1 and 2 lists the PAH and biomarker parameters measured, and provides compound abbreviations used in graphical presentation of the data.

Forensic Analysis

The gas chromatogram, or “fingerprint”, is chromatographic output that describes the distribution of the petroleum hydrocarbons in a sample. The chromatogram depicts, from left to right, the distribution of the most to least volatile hydrocarbons in a sample². The peaks that appear in the chromatogram represent one or more discrete compounds, the height of which is proportional to the abundance of those compounds in the petroleum. Every type of petroleum product has its own unique distribution of hydrocarbons. It is this fundamental gas chromatographic feature – the GC “fingerprint” – that allows the environmental chemist to identify and distinguish one petroleum product from another (i.e., crude oil, light and middle distillate fuels, coal-derived materials, and their combustion and waste residues). Even though weathering processes can significantly alter the chromatographic signature of hydrocarbons, the important characteristics can usually be distinguished from the chromatographic “fingerprint”.

More detailed measurements of the petroleum residues in samples are obtained from gas chromatography/mass spectrometry (GC/MS) data. Measurements of individual hydrocarbon chemicals – particularly polycyclic aromatic hydrocarbons (PAH) – provide specific information about hydrocarbon

¹ Douglas, G.D., Emsbo-Mattingly, S.D., Stout, S.A., Uhler, A.D., and McCarthy, K.J. (2007) Chemical fingerprinting of hydrocarbons and polychlorinated biphenyls. In: *Introduction to Environmental Forensics*, 2nd Ed., B. Murphy and R. Morrison, Eds., Academic Press, New York, pp. 317-459.

² The elution order (e.g. retention time) of peaks on the chromatogram is a function of volatility with the most volatile compounds eluting early in the GC run (e.g., n-C₁₀), and the less volatile hydrocarbons eluting later in the GC run (e.g., n-C₃₀).

contamination found in samples.³ The distribution patterns within a given homologous group of PAH provide a useful tool for hydrocarbon fingerprinting. Petrogenic (petroleum-derived) products exhibit PAH homolog patterns where compounds with C2- and C3-alkylated PAH are more abundant than the parent (non-alkylated) PAH. The resulting PAH profile is “bell-shaped”. Combustion-derived (pyrogenic) materials exhibit PAH profiles in which the parent PAH is most abundant, and there is an inverse relationship between relative abundance and alkylation level (i.e., C0 > C1 > C2 > C3 > C4). The resulting PAH profile is “skewed” or “sloped”.

Weathering can alter the chromatographic and molecular features of petroleum. The three types of environmental weathering that can affect the chemical composition of subsurface petroleum: evaporation, biodegradation, and solubilization. As oil weathers, environmentally labile chemical hydrocarbons are removed by weathering; many of these labile compounds are the discrete peaks that appear in the chromatogram of fresh petroleum. As such the chromatogram of weathered petroleum has fewer resolved peaks, and the unresolved complex mixture (UCM, or “hump”) shifts toward the higher molecular weight constituents that are more resistant to weathering. The changes observed can often be used to evaluate product weathering in the subsurface environment. Low molecular weight PAH (LPAH) are more susceptible than high molecular weight PAH (HPAH), followed by increasing alkylation level within the same PAH series (i.e., C0 < C1 < C2 < C3). Weathering occurs in predictable chemical sequences, although the rate of weathering is dependent on a wide variety of environmental factors (e.g., hydrocarbon concentration, bacterial populations, availability of nutrients, temperature, moisture content, etc.).

Results and Discussion

The complete Alpha Environmental Testing Reports (ETRs) including all quality control data and chromatograms is maintained by NewFields (ETRs L1203300, L1204030, 1203044, and 1203045). These can be provided if requested. A summary of the laboratory results from the chemical analyses performed in this investigation is provided in Attachment 1. This summary includes chain-of-custody records, gas chromatograms, tabulated results of chemical analyses, and quality control sample results.

Characterization of the Catch Basin Samples

The four site samples collected proximal to Catch Basin 1 (CB#1, Parking lot CB (sheen, sediment, and water)) and the site sample collected at Catch Basin 2 (CB#2) were comprised of complex mixtures of variably weathered petroleum, with the major component being middle distillate petroleum (i.e. diesel fuel, or fuel oil #2). Figures 2 through 6 provide graphical summaries of relevant hydrocarbon characteristics of the five samples. In each of these figures, panel (a) presents the GC/FID chromatogram, (b) a histogram of C₁-C₄ alkylated PAHs and sulfur heterocyclic compounds that compose the sample, and (c) and the *m/z* 191 extracted ion profile (EIP) of triterpane biomarkers.

CB#1

The GC/FID chromatogram of CB#1 sample shows that this sample is composed of a diesel-like middle distillate mixed with broad boiling heavy petroleum. The dominant carbon range is from nC₁₀-nC₄₀. There is a distinct UCM that elutes between nC₁₀ and nC₂₅. Numerous resolved peaks co-elute at specific retention times with the UCM. Many of these peaks are recognized as aliphatic hydrocarbons, branched chain iso-alkanes (e.g., norpristane, pristane, and phytane), and alkylated naphthalene compounds.

The PAH profile of the CB#1 is both petrogenic and pyrogenic in nature. Inspection of the PAH distributions in sample CB#1 shows that the major PAH homologous series are petrogenic in nature and are consistent with fuel oil #2. The evidence for the petroleum-related PAH can be seen in the bell-shaped

³ Stout, S.A., Uhler, A.D., McCarthy, K.J. and Emsbo-Mattingly, S.D. (2002) Chemical Fingerprinting of Hydrocarbons. In: *Introduction to Environmental Forensics*, B. Murphy and R. Morrison, Eds., Academic Press, New York, p. 135-260.

distribution of naphthalenes and the sulfur-containing dibenzothiophenes. The indication of pyrogenic-related PAH can be seen in the skewed homologue patterns, i.e., C₀->C₁->C₂->C₃-substituted homologues (e.g. the phenanthrene, fluoranthene/pyrene and chrysene series) that are emblematic of combustion-derived PAH.

Parking Lot CB (sheen)

The GC/FID chromatogram of Parking Lot CB (sheen) shows that this sample is composed of a diesel-like middle distillate (fuel oil #2) with broad boiling heavy petroleum. The dominant carbon range is from nC₁₀-nC₄₀. There is a distinct UCM that elutes between nC₁₀ and nC₂₅. Numerous resolved peaks co-elute at specific retention times with the UCM. Many of these peaks are recognized branched chain iso-alkanes (e.g., norpristane, pristane, and phytane). Parking Lot CB (sheen) is very similar in composition to CB#1.

The PAH profile of the Parking Lot CB (sheen) is more petrogenic in nature and is much more weathered. Inspection of the PAH distributions in sample Parking Lot CB (sheen) shows that all of the major PAH homologous series are petrogenic in nature and are consistent with fuel oil #2. The evidence for the petroleum-related PAH can be seen in the bell-shaped distribution of phenanthrenes, and the sulfur-containing dibenzothiophenes. The upslope distribution of the naphthalene series is an indication of weathering. The evidence of pyrogenic-related PAH can be seen in the skewed distribution of the fluoranthene/pyrene and chrysene series.

Parking Lot CB (sediment)

The GC/FID chromatogram of Parking Lot CB (sediment) shows that this sample is composed of a diesel-like middle distillate (fuel oil #2) with broad boiling heavy petroleum. The dominant carbon range is from nC₉-nC₄₀. There is a distinct UCM that elutes between nC₉ and nC₂₅. Numerous resolved peaks co-elute at specific retention times with the UCM. Many of these peaks are recognized branched chain iso-alkanes and Isoprenoids (e.g., norpristane, pristane, and phytane).

The PAH profile of the Parking Lot CB (sediment) is more petrogenic in nature. Inspection of the PAH distributions in sample Parking Lot CB (sediment) shows that all of the major PAH homologous series are petrogenic in nature and are consistent with fuel oil #2. The evidence for the petroleum-related PAH can be seen in the bell-shaped distribution of naphthalenes, phenanthrenes, and the sulfur-containing dibenzothiophenes, fluoranthene/pyrenes, and chrysenes. There is no evidence of pyrogenic-related PAH.

Parking Lot CB (water)

The GC/FID chromatogram of Parking Lot CB (water) shows that this sample is composed of a diesel-like middle distillate (fuel oil #2) mixed with trace gasoline range organics (GRO) and broad boiling heavy petroleum. There is a bimodal UCM ranging from nC₉ to nC₄₀ with maximum at nC₁₆ and nC₃₁. Numerous resolved peaks co-elute at specific retention times with the UCM in the nC₉-nC₂₅ range. Many of these peaks are known as branched chain alkanes and isoprenoids. The resolved peaks superimposed on the UCM ranging from nC₂₅ to nC₄₀ are recognized as primarily 4- through 6-ring pyrogenic PAH. . These features are clearly evident in the gas chromatogram shown in Figure 5(A).

The PAH profile of the Parking Lot CB (water) is both petrogenic and pyrogenic in nature, consistent with urban runoff. Inspection of the PAH distributions in Parking Lot CB (water) shows evidence of PAH homologous series that is petrogenic (e.g., naphthalenes and dibenzothiophenes) in addition to the well recognized pattern of pyrogenic PAH, i.e., skewed homologue patterns, i.e., C₀->C₁->C₂->C₃-substituted homologues (e.g. the fluoranthene/pyrene and chrysene series). Additional pyrogenic PAH are noted in the sample, namely the presence of 5- and 6-ring dominantly PAH (e.g., benzo(a)pyrene).

CB#2

The GC/FID chromatogram of CB#2 shows that this sample is consists of a diesel-like middle distillate (fuel oil #2) mixed with broad boiling heavy petroleum. The fingerprint is very similar to Parking Lot

CB (water), however the GRO component is missing. There is a bimodal UCM ranging from nC₁₁ to nC₄₀ with maximum at nC₁₆ and nC₃₁. Numerous resolved peaks co-elute at specific retention times with the UCM in the nC₉-nC₂₅ range. Many of these peaks are known as branched chain alkanes and isoprenoids. The resolved peaks superimposed on the UCM ranging from nC₂₅ to nC₄₀ are recognized as primarily 4- through 6-ring pyrogenic PAH.

The PAH profile of CB#2 is both petrogenic and pyrogenic in nature, consistent with urban runoff. Inspection of the PAH distributions in CB#2 shows evidence of PAH homologous series that is petrogenic (e.g., naphthalenes and dibenzothiophenes) in addition to the well recognized pattern of pyrogenic PAH, i.e., skewed homologue patterns (e.g. the fluoranthene/pyrene and chrysene series).

Weathering Characteristics of the Catch Basin Samples

The degree of relative environmental weathering experienced by the residues found in the samples was evaluated by both qualitative and quantitative analysis of the data and careful examination of the high resolution hydrocarbon fingerprints. The carbon range for the Catch Basin samples was generally in the nC₁₁ to nC₄₀, with the dominant UCM in the nC₁₁ to nC₂₅ range, indicating little differences in the degree of evaporation.

The degree of weathering due to biodegradation was evaluated by determining the ratio of n-C₁₇/pristane. As a petroleum biodegrades, alkanes, represented by nC₁₇, are consumed while the recalcitrant isoprenoids, represented by pristane, remain intact. As the fuel incrementally degrades, the ratio of n-C₁₇/pristane becomes smaller in value. Ratios above 2 generally are consistent with virtually fresh fuels;⁴ ratios of zero represent severely weathered fuel; intermediate values represent intermediate degrees of weathering. The table below shows the ratio of n-C₁₇/pristane for the Catch Basin samples. All samples appear moderate-to-severely biodegraded.

| Field ID | TPH (ppm) | n-C17/Pr | Pr/Ph | Dominant Fingerprint | Degree of Biodegradation |
|---------------------------|-----------|----------|-------|----------------------|--------------------------|
| CB#1 | 712,000 | 0.36 | 1.25 | Diesel Fuel Oil #2 | Moderate- to-Severe |
| Parking Lot CB (sheen) | 587,000 | 0.24 | 1.54 | Diesel/Fuel Oil #2 | Moderate- to-Severe |
| Parking Lot CB (sediment) | 860,000 | 0.43 | 1.31 | Diesel/Fuel Oil #2 | Moderate- to-Severe |
| Parking Lot CB (water) | 9.47 | 0.53 | 1.26 | Diesel/Fuel Oil #2 | Moderate- to-Severe |
| CB#2 | 322,000 | 0.31 | 1.27 | Diesel/Fuel Oil #2 | Moderate- to-Severe |

Characterization of Oil Water Separator Samples (sheen and water)

The GC/FID chromatogram of the Oil Water Separator (sheen) shown in Figure 7(A) is composed of a diesel-like middle distillate (fuel oil #2). There is a distinct UCM that elutes between nC₁₃ and nC₂₄. Numerous resolved peaks co-elute at specific retention times with the UCM. Many of these peaks are recognized as branched chain iso-alkanes and isoprenoids (e.g., norpristane, pristane, and phytane).

The PAH profile of the Oil Water Separator (sheen) is more petrogenic in nature. The PAH distributions in sample Oil Water Separator (sheen) shows that all of the major PAH homologous series are petrogenic in nature and are consistent with fuel oil #2. The evidence for the petroleum-related PAH can be seen in the bell-shaped distribution of fluorenes, phenanthrenes, and dibenzothiophenes. The upslope distribution of the naphthalene series is an indication of weathering. The evidence of pyrogenic-related PAH can be seen in the skewed distribution of the fluoranthene/pyrene and chrysene series

The GC/FID chromatogram of Oil Water Separator (water) presented in Figure 8(A) shows that this sample is composed of a mixture of gasoline range organics and diesel range organics. While there are resolved peaks present ranging from nC₈ to nC₂₅ with a trace UCM ranging from nC₁₀ to nC₂₅, these cannot be classified as gasoline constituents or middle distillate components. The PAH profile shows

⁴ Morrison, R. Environmental Forensics: Principles and Applications. 1999. CRC Press.

evidence of pyrogenic-related PAH as can be seen in the skewed distribution of the fluorene, phenanthrene, and fluoranthene/pyrene series. As shown in figure 8(C), there are no biomarkers present, indicating that the Oil Water separator (water) is not of petroleum origin.

Observations and Summary

Forensic chemistry analytical data from analysis of samples taken from National Grid's 642 Allens Avenue, Providence, Rhode Island indicate that

- The five Catch Basin samples (CB#1, Parking lot CB (sheen, sediment, and water), and CB#2) were comprised of complex mixtures of variably weathered petroleum, with the major component being middle distillate petroleum (i.e. diesel fuel, or fuel oil #2).
- Samples CB#2 and Parking Lot CB (water) are both petrogenic and pyrogenic in nature, consistent with urban runoff.
- Oil Water Separator (sheen) consist of a severely weathered diesel-like middle distillate (i.e., diesel fuel, or fuel oil #2)
- Oil Water Separator (water) consists of gasoline range and diesel range organic compounds. There are no biomarkers present indicating that it is not of petroleum origin.

If you have any questions regarding this report, please do not hesitate to call me at (781) 681-5040 x123.

Sincerely,



Kerylynn Krahforst
Staff Scientist

Attachment 1: Data Deliverable

Table 1. Polycyclic Aromatic and Related Heterocyclic Compound Target Analytes.

| Abbr. | Compound | | Abbr. | Compound |
|-------|------------------------------|--|-------|---|
| D0 | cis/trans-Decalin | | FL0 | Fluoranthene |
| D1 | C1-Decalins | | PY0 | Pyrene |
| D2 | C2-Decalins | | FP1 | C1-Fluoranthenes/Pyrenes |
| D3 | C3-Decalins | | FP2 | C2-Fluoranthenes/Pyrenes |
| D4 | C4-Decalins | | FP3 | C3-Fluoranthenes/Pyrenes |
| BT0 | Benzothiophene | | FP4 | C4-Fluoranthenes/Pyrenes |
| BT1 | C1-Benzo(b)thiophenes | | NBT0 | Naphthobenzothiophenes |
| BT2 | C2-Benzo(b)thiophenes | | NBT1 | C1-Naphthobenzothiophenes |
| BT3 | C3-Benzo(b)thiophenes | | NBT2 | C2-Naphthobenzothiophenes |
| BT4 | C4-Benzo(b)thiophenes | | NBT3 | C3-Naphthobenzothiophenes |
| N0 | Naphthalene | | NBT4 | C4-Naphthobenzothiophenes |
| N1 | C1-Naphthalenes | | BA0 | Benz[a]anthracene |
| N2 | C2-Naphthalenes | | C0 | Chrysene/Triphenylene |
| N3 | C3-Naphthalenes | | BC1 | C1-Chrysenes |
| N4 | C4-Naphthalenes | | BC2 | C2-Chrysenes |
| B | Biphenyl | | BC3 | C3-Chrysenes |
| DF | Dibenzofuran | | BC4 | C4-Chrysenes |
| AY | Acenaphthylene | | BBF | Benzo[b]fluoranthene |
| AE | Acenaphthene | | BJKF | Benzo[j]fluoranthene/Benzo[k]fluoranthene |
| F0 | Fluorene | | BAF | Benzo[a]fluoranthene |
| F1 | C1-Fluorenes | | BEP | Benzo[e]pyrene |
| F2 | C2-Fluorenes | | BAP | Benzo[a]pyrene |
| F3 | C3-Fluorenes | | PER | Perylene |
| A0 | Anthracene | | IND | Indeno[1,2,3-cd]pyrene |
| P0 | Phenanthrene | | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene |
| PA1 | C1-Phenanthrenes/Anthracenes | | GHI | Benzo[g,h,i]perylene |
| PA2 | C2-Phenanthrenes/Anthracenes | | CAR | Carbazole |
| PA3 | C3-Phenanthrenes/Anthracenes | | 4MDT | 4-Methyldibenzothiophene |
| PA4 | C4-Phenanthrenes/Anthracenes | | 2MDT | 2/3-Methyldibenzothiophene |
| RET | Retene | | 1MDT | 1-Methyldibenzothiophene |
| DBT0 | Dibenzothiophene | | 3MP | 3-Methylphenanthrene |
| DBT1 | C1-Dibenzothiophenes | | 2MP | 2/4-Methylphenanthrene |
| DBT2 | C2-Dibenzothiophenes | | 2MA | 2-Methylanthracene |
| DBT3 | C3-Dibenzothiophenes | | 9MP | 9-Methylphenanthrene |
| DBT4 | C4-Dibenzothiophenes | | 1MP | 1-Methylphenanthrene |
| BF | Benzo(b)fluorene | | | |

Table 2. Petroleum Biomarker Compounds.

| Abbr. | Compound | Abbr. | Compound |
|-------|----------------------------------|-------------|--|
| T4 | C23 Tricyclic Terpane | T32 | Tetrakishomohopane-22S |
| T5 | C24 Tricyclic Terpane | T33 | Tetrakishomohopane-22R |
| T6 | C25 Tricyclic Terpane | T34 | Pentakishomohopane-22S |
| T6a | C24 Tetracyclic Terpane | T35 | Pentakishomohopane-22R |
| T6b | C26 Tricyclic Terpane-22S | S4 | 13b(H),17a(H)-20S-Diacholestane |
| T6c | C26 Tricyclic Terpane-22R | S5 | 13b(H),17a(H)-20R-Diacholestane |
| T7 | C28 Tricyclic Terpane-22S | S8 | 13b,17a-20S-Methylcholestane |
| T8 | C28 Tricyclic Terpane-22R | S12 | 14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethylcholestane (S12) |
| T9 | C29 Tricyclic Terpane-22S | S17 | 14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethylcholestane (S17) |
| T10 | C29 Tricyclic Terpane-22R | S18 | Unknown Sterane (S18) |
| T11 | 18a-22,29,30-Trisnorhopane-TS | S19 | 13a,17b-20S-Ethylcholestane |
| T11a | C30 Tricyclic Terpane-22S | S20 | 14a,17a-20S-Methylcholestane |
| T11b | C30 Tricyclic Terpane-22R | S24 | 14a,17a-20R-Methylcholestane |
| T12 | 17a(H)-22,29,30-Trisnorhopane-TM | S25 | 14a(H),17a(H)-20S-Ethylcholestane |
| T14a | 17a/b,21b/a 28,30-Bisnorhopane | S28 | 14a(H),17a(H)-20R-Ethylcholestane |
| T14b | 17a(H),21b(H)-25-Norhopane | S14 | 14b(H),17b(H)-20R-Cholestane |
| T15 | 30-Norhopane | S15 | 14b(H),17b(H)-20S-Cholestane |
| T16 | 18a(H)-30-Norneohopane-C29Ts | S22 | 14b,17b-20R-Methylcholestane |
| X | 17a(H)-Diahopane | S23 | 14b,17b-20S-Methylcholestane |
| T17 | 30-Normoretane | S26 | 14b(H),17b(H)-20R-Ethylcholestane |
| T18 | 18a(H)&18b(H)-Oleananes | S27 | 14b(H),17b(H)-20S-Ethylcholestane |
| T19 | Hopane | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid |
| T20 | Moretane | SC28TA | C28,20S-triaromatic steroid |
| T21 | 30-Homohopane-22S | RC27TA | C27,20R-triaromatic steroid |
| T22 | 30-Homohopane-22R | RC28TA | C28,20R-triaromatic steroid |
| T26 | 30,31-Bishomohopane-22S | T22A | T22a-Gammacerane/C32-diahopane |
| T27 | 30,31-Bishomohopane-22R | | |
| T30 | 30,31-Trishomohopane-22S | | |
| T31 | 30,31-Trishomohopane-22R | | |

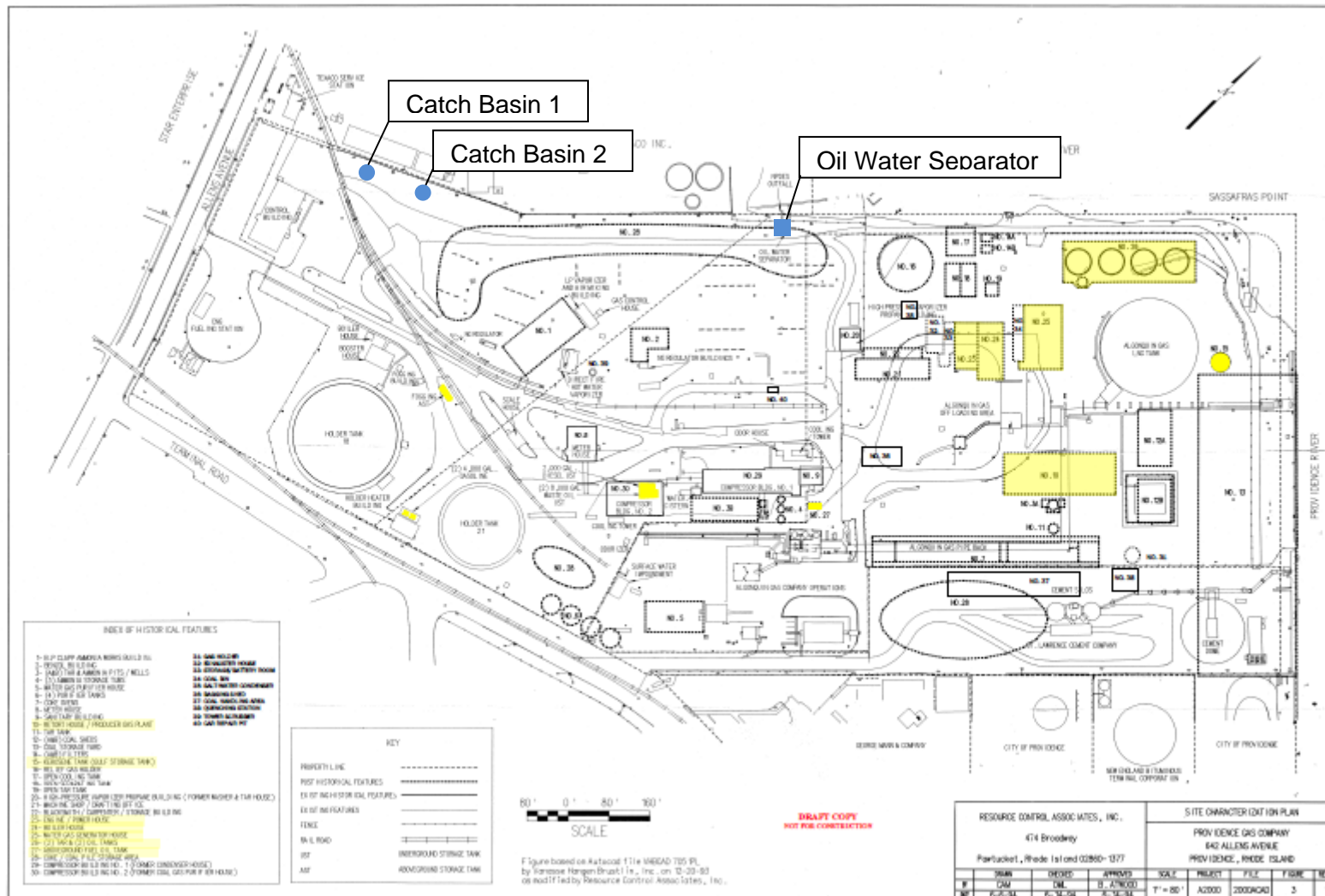


Figure 1. National Grid's 642 Allens Avenue site and approximate sample locations.

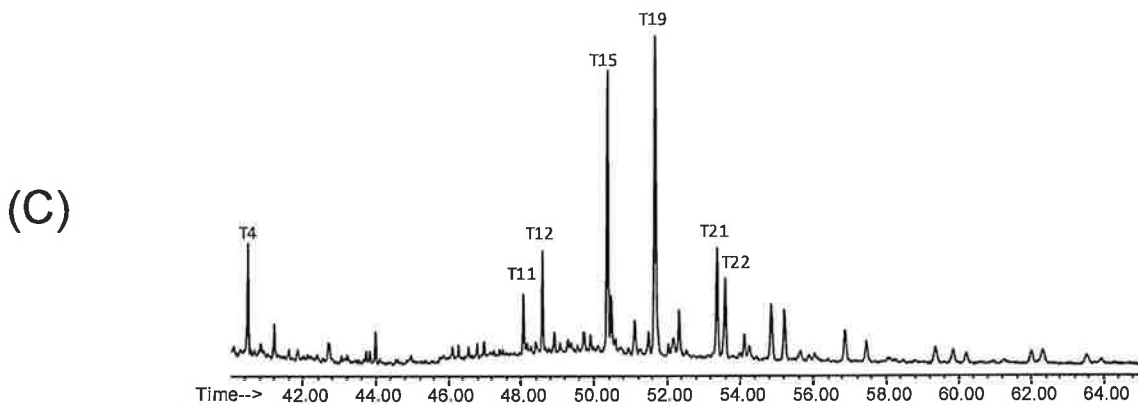
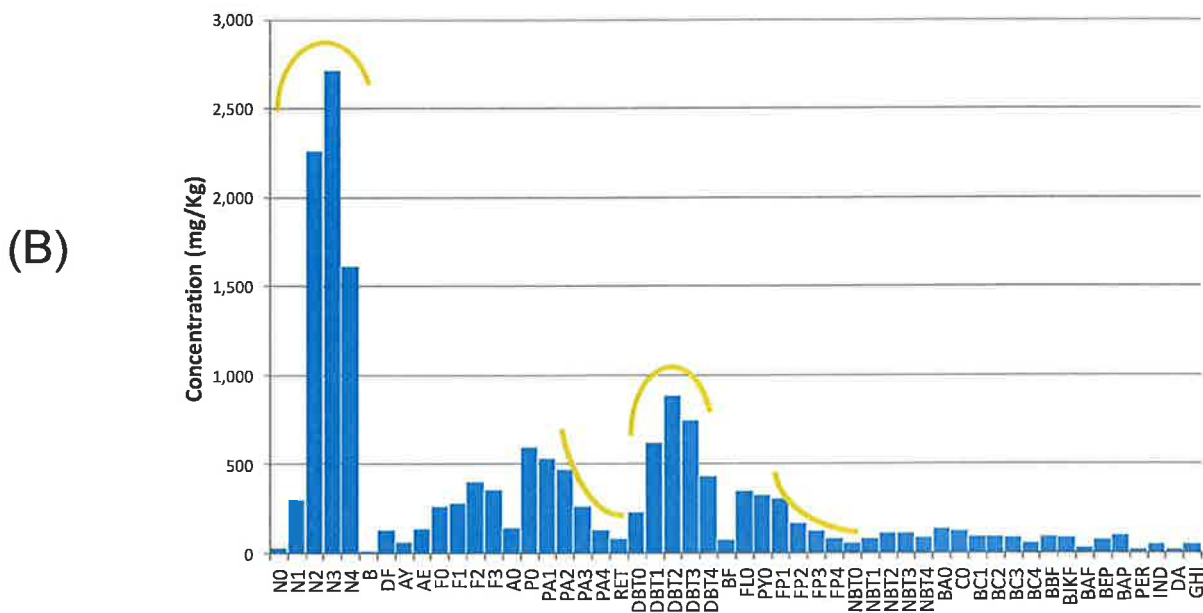
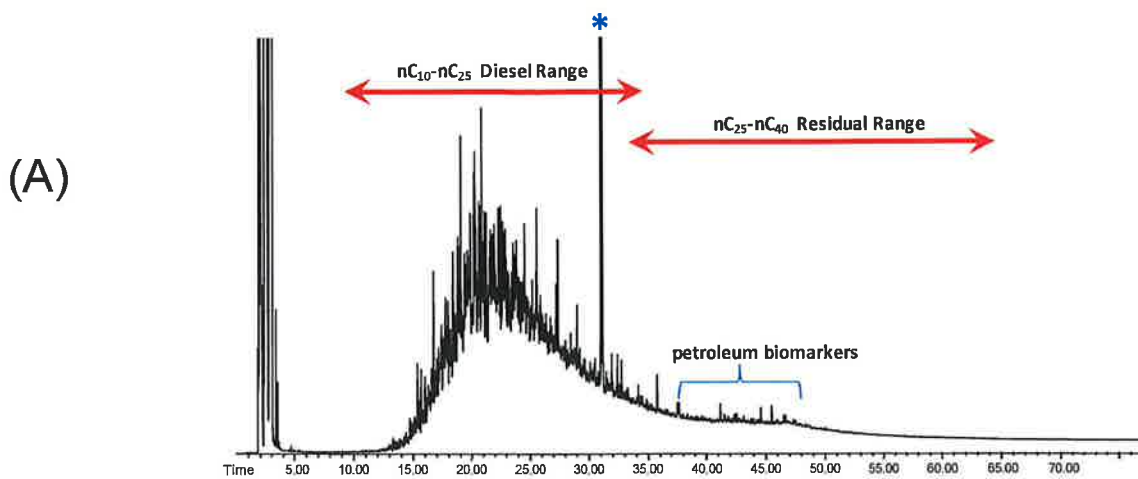


Figure 2. (A) gas chromatogram, (B) PAH histogram, and (C) *m/z* 191 triterpane biomarker extracted ion profile (EIP) for sample CB#1.

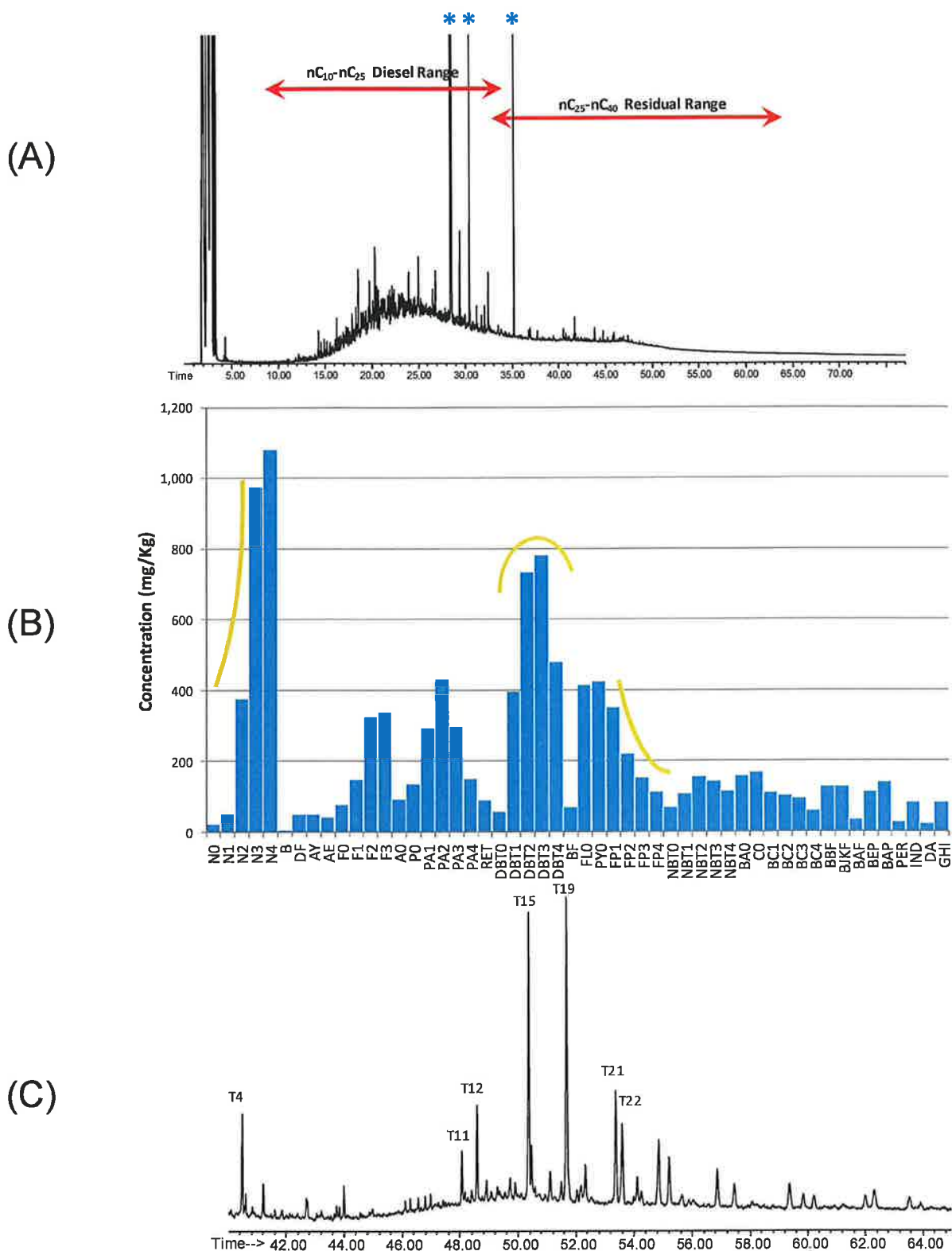


Figure 3. (A) gas chromatogram, (B) PAH histogram, and (C) m/z 191 triterpane biomarker extracted ion profile (EIP) for sample Parking Lot CB (sheen).

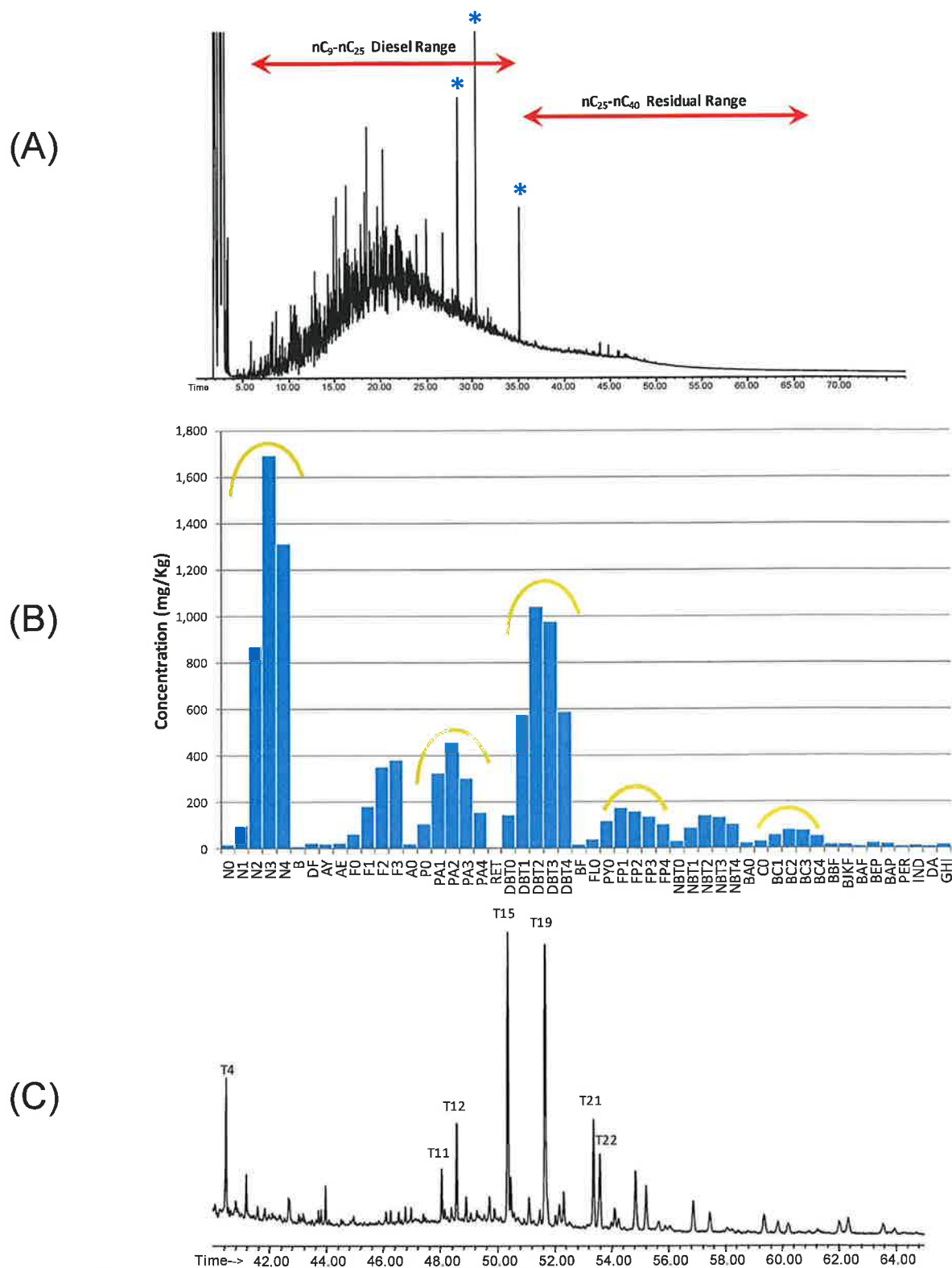


Figure 4. (A) gas chromatogram, (B) PAH histogram, and (C) m/z 191 triterpane biomarker extracted ion profile (EIP) for sample Parking Lot CB (sediment).

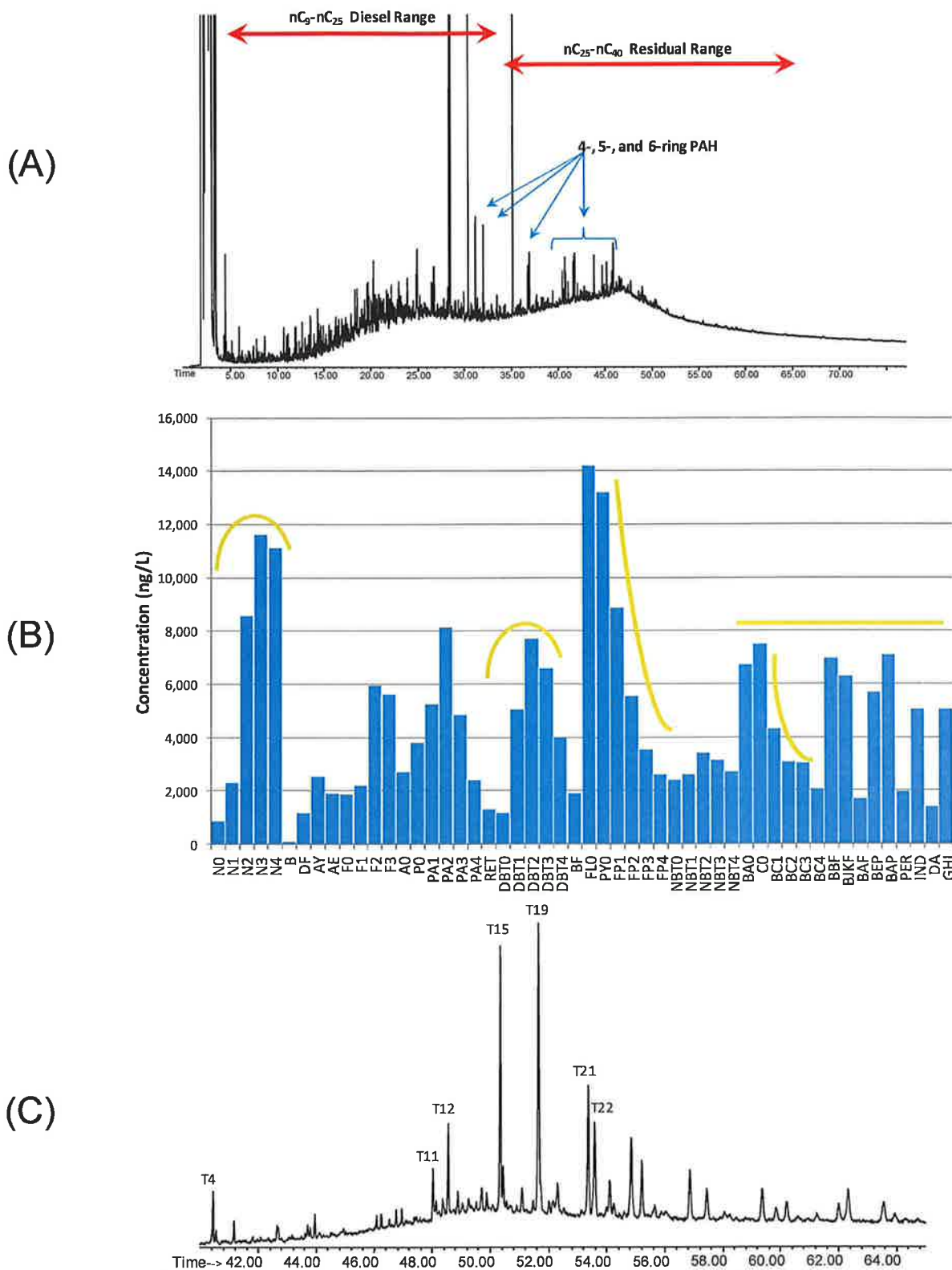


Figure 5. (A) gas chromatogram, (B) PAH histogram, and (C) *m/z* 191 triterpane biomarker extracted ion profile (EIP) for sample Parking Lot CB (water).

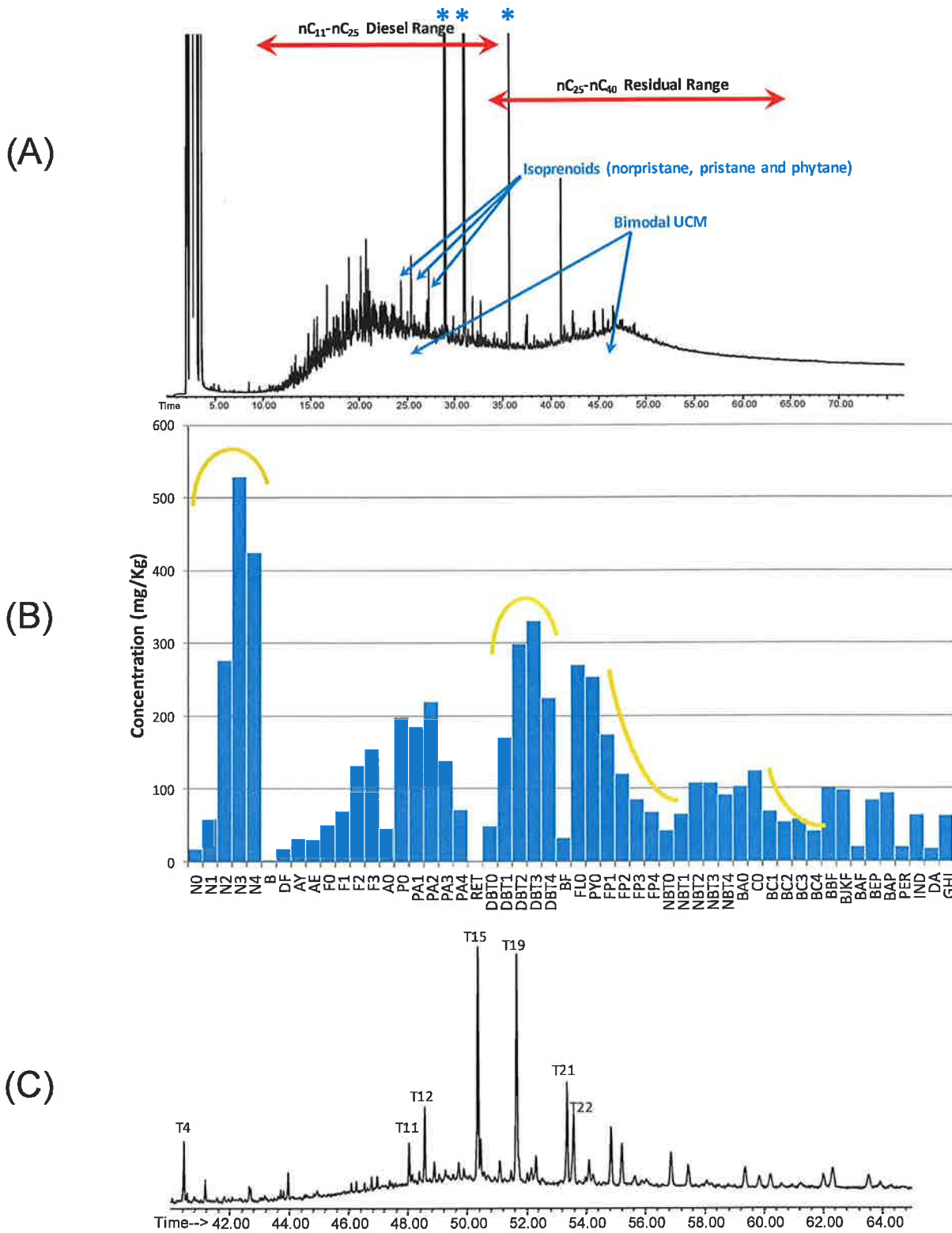


Figure 6. (A) gas chromatogram, (B) PAH histogram, and (C) m/z 191 triterpane biomarker extracted ion profile (EIP) for sample CB#2.

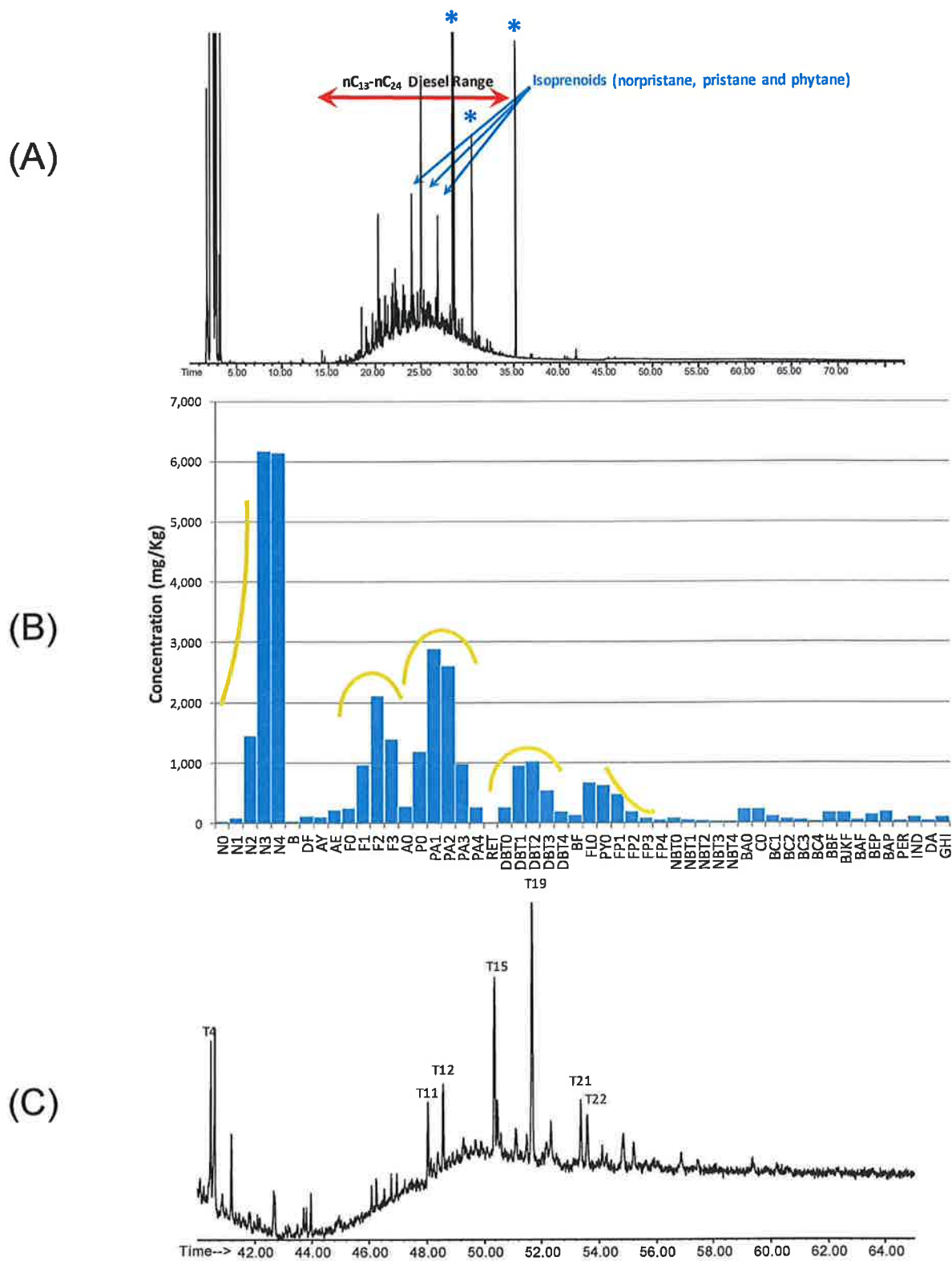


Figure 7. (A) gas chromatogram, (B) PAH histogram, and (C) m/z 191 triterpane biomarker extracted ion profile (EIP) for sample Oil Water Separator (sheen).

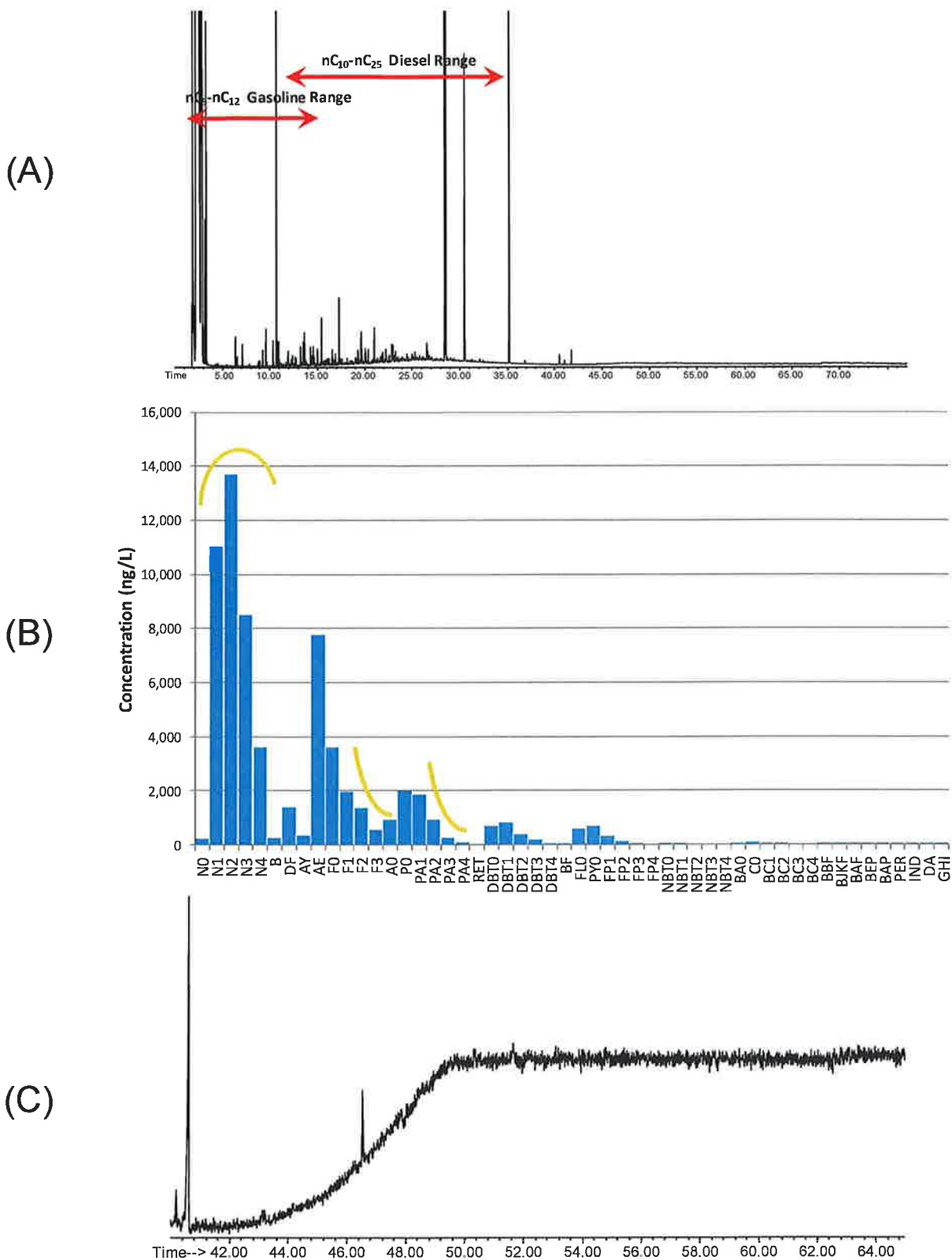


Figure 8. (A) gas chromatogram, (B) PAH histogram, and (C) m/z 191 triterpane biomarker extracted ion profile (EIP) for sample Oil Water Separator (water).

Attachment 1



NEWFIELDS

new INSIGHT | new DIRECTION | new DECISION

GZA GeoEnvironmental, Inc.
National Grid
642 Allens Avenue, Providence, RI
Data Deliverable May 25, 2012


Chain of Custody

421286 1203044 -

L1203300

CHAIN OF CUSTODY

PAGE 1 OF 1



WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Project Information

Project Name: 642 ALLEN'S AVENUE

Project Location: PROVIDENCE, RI

Project #: 33554

Project Manager: MEG KILPATRICK

ALPHA Quote #:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)

Date Due: _____ Time: _____

Date Rec'd In Lab: 2/27/12

Report Information - Data Deliverables

FAX EMAIL Excel

ADEX Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program: RIDEM Criteria: 1/C DEL & 6B

Client Information

Client: GZA

Address: 530 BROADWAY
PROVIDENCE, RI 02909

Phone: 401-421-4140

Fax:

Email: Sophia.markiewicz@gza.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:
EMAIL RESULTS TO
margaret.kilpatrick@gza.com

| ALPHA Lab ID (Lab Use Only) | Sample ID | Collection | | Sample Matrix | Sampler's Initials | | | | | | | | | | | | | | | TOTAL # BOTTLES | | |
|--------------------------------|--------------------|--------------------------------|--------------------|--------------------|--------------------|---------------------|----------------|--------------|--------------|--|--|--|--|--|--|--|--|--|--|-----------------|--------------|--------------|
| | | Date | Time | | | | | | | | | | | | | | | | | | | |
| | 0279161 | PARKING LOT | CB | 2/24/12 | 10:00 | SHEEN | SDN | ✓ | | | | | | | | | | | | | 1 | |
| | 2 | PARKING LOT | CB | 2/24/12 | 10:15 | SEDIMENT | SDN | ✓ | | | | | | | | | | | | | | 1 |
| | 3 | PARKING LOT | CB | 2/24/12 | 10:15 | WATER | SDN | ✓ | ✓ | | | | | | | | | | | | | 3 |
| | 4 | OIL WATER SEPARATOR | 2/24/12 | 11:20 | SHEEN | SDN | ✓ | | | | | | | | | | | | | | | 1 |
| | 5 | OIL WATER SEPARATOR | 2/24/12 | 11:20 | WATER | SDN | ✓ | ✓ | | | | | | | | | | | | | | 2 |

ANALYSIS
3015 TPH - PH1
EPA 8260

SAMPLE HANDLING

Filtration _____

Done

Not needed

Lab to do
Preservation

Lab to do

(Please specify below)

Container Type - VOL

Preservative - M

| Relinquished By: | Date/Time | Received By: | Date/Time |
|--------------------|----------------------|--------------------|----------------------|
| <u>[Signature]</u> | <u>2/27/12 10:30</u> | <u>[Signature]</u> | <u>2/27/12 12:05</u> |
| <u>[Signature]</u> | <u>2/27/12 11:20</u> | <u>[Signature]</u> | <u>2/27/12 10:20</u> |
| <u>[Signature]</u> | <u>2/27/12 10:35</u> | <u>[Signature]</u> | <u>2/29/12 10:35</u> |
| <u>[Signature]</u> | <u>2/28/12</u> | <u>[Signature]</u> | <u>2/28/12 08:35</u> |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.



Sample Delivery Group Form

Laboratory Job number: L1203300

Project Number: 33554

Project Name: 642 ALLENS AVENUE

Received: 02/27/2012 12:05

Client Account: GZA GeoEnvironmental, Inc.

Received by: DIANNE JANAK

Samples Delivered by: COURIER

Call Tracker #

Bill Of Laden N/A

Trackingnum

Coc Present Present

Container Status Intact

Sample IDs samples rec'd in Westboro 2/28/12@18:00-2.3C(6893118)

All Containers Accounted For? Yes

Were Extra Samples Received? No

Do Sample Labels and COC agree? No

3 vials rec'd - not labelled - per KOBR (Parking Lot CB) ; rec'd 5 containers for Parking Lot CB not 3 as on COC: rec'd 4 containers for Oil Water Sep not 2 as on COC

Are Samples in Appropriate Containers? Yes

Are Samples Received within Holding time? Yes

pH of Samples upon Receipt N/A

Are samples Properly Preserved? Yes

Initial pH preserved in house with

Final pH

Other Issues

Chlorine Check N/A

Are VOA/VPH Vials Present? Yes

Aqueous: Do Vials Contain Head Space? No

Soils: Is MeOH Covering the Soil? N/A

Reagent H2O Preserved vials Frozen on N/A

Frozen by Client N/A

| Cooler | Seal | Ice Present | Blue Ice Present | Temp. (Celsius) | Frozen upon Receipt | Delivered Direct from Site |
|--------|--------|-------------|------------------|-----------------|---------------------|----------------------------|
| A | Absent | Yes | No | 2.6 - IR Gun | No | No |



Sample Delivery Group Form

Laboratory Job number: L1204030

Project Number: 33554

Project Name: 642 ALLENS AVENUE

Client Account: GZA GeoEnvironmental, Inc.

Received: 03/08/2012 09:55

Received by: KEVIN LAPLANTE

Samples Delivered by: COURIER

Call Tracker #

Bill Of Laden N/A

Trackingnum

Coc Present Present

Container Status Intact

Sample IDs

All Containers Accounted For? Yes

Were Extra Samples Received? No

Do Sample Labels and COC agree? Yes

Are Samples in Appropriate Containers? Yes

Are Samples Received within Holding time? Yes

pH of Samples upon Receipt N/A

Are samples Properly Preserved? Yes

Initial pH preserved in house with

Final pH

Other Issues

Chlorine Check N/A

Are VOA/VPH Vials Present? No

Aqueous: Do Vials Contain Head Space? N/A

Soils: Is MeOH Covering the Soil? N/A

Reagent H2O Preserved vials Frozen on N/A

Frozen by Client N/A

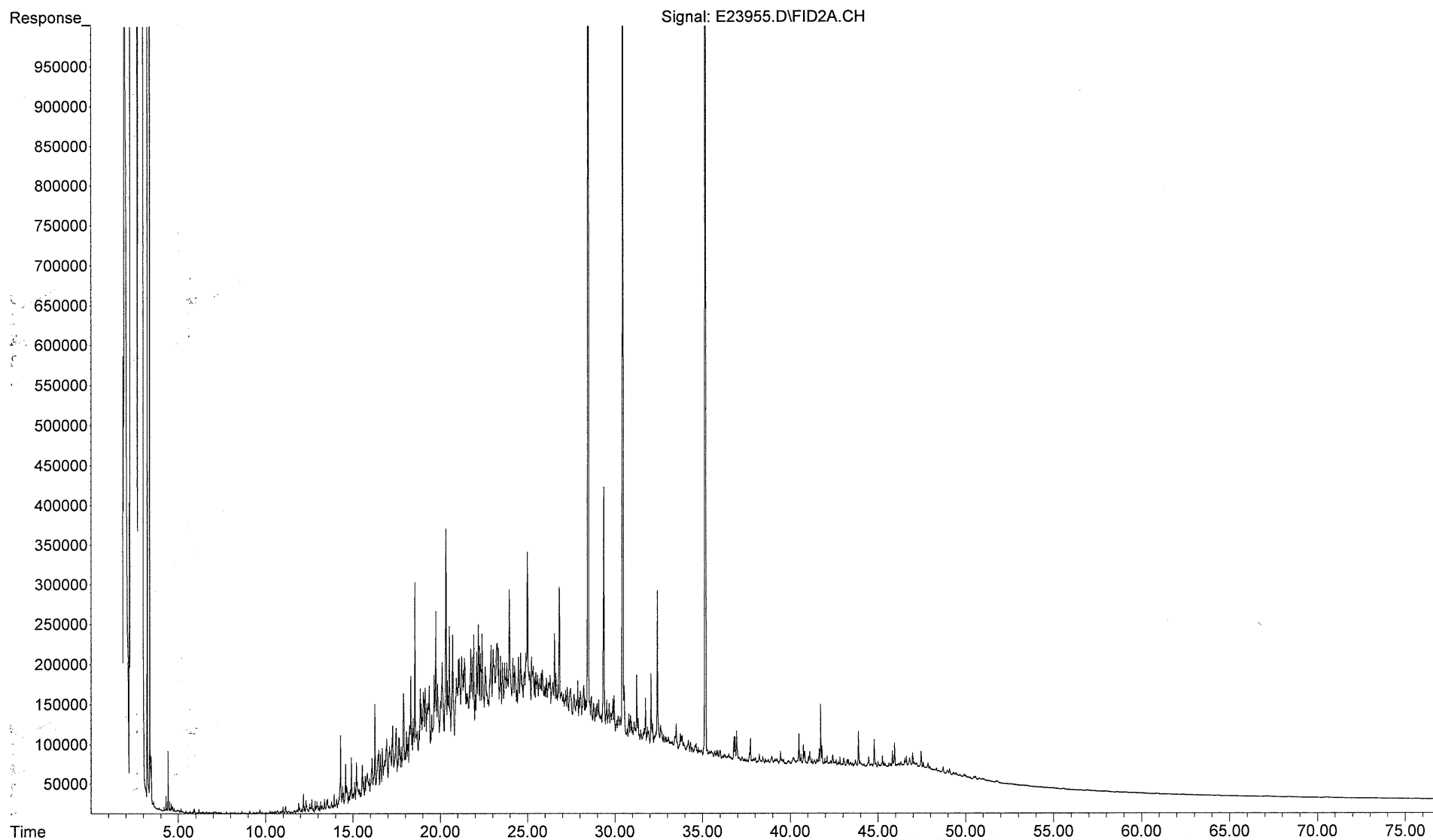
| Cooler | Seal | Ice Present | Blue Ice Present | Temp. (Celsius) | Frozen upon Receipt | Delivered Direct from Site |
|--------|--------|-------------|------------------|-----------------|---------------------|----------------------------|
| A | Absent | No | No | 4.3 - IR Gun | No | No |

03/12/2012

GC/FID Chromatograms

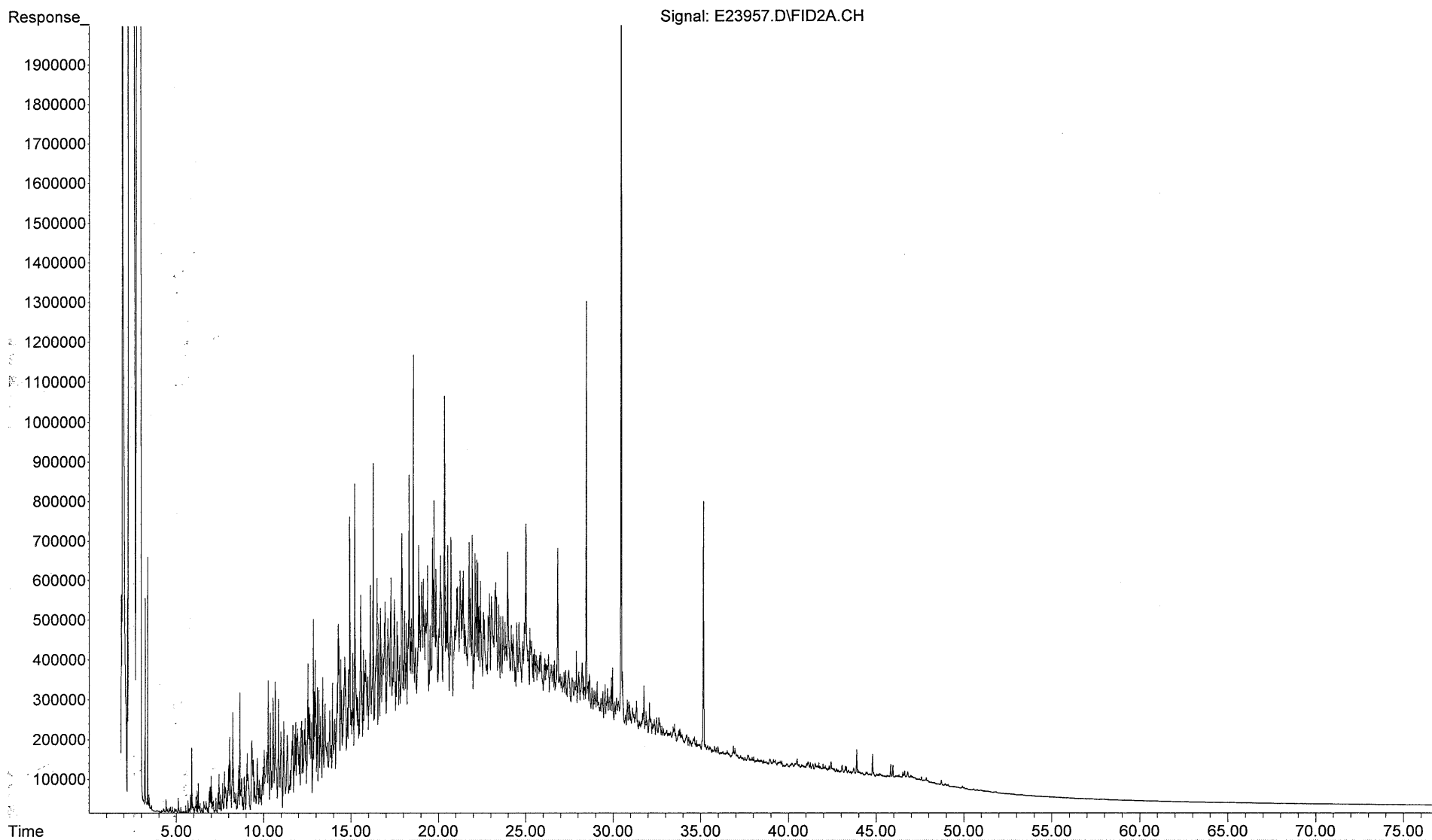
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Operator : PAH2:AC
Instrument : PAH 2
Acquired : 03 Mar 2012 2:18 am using AcqMethod FRNC2A.M
Sample Name: L1203300-01,42
Misc Info : WG522566,WG522240

Parking Lot CB Sheen
L1203300-01



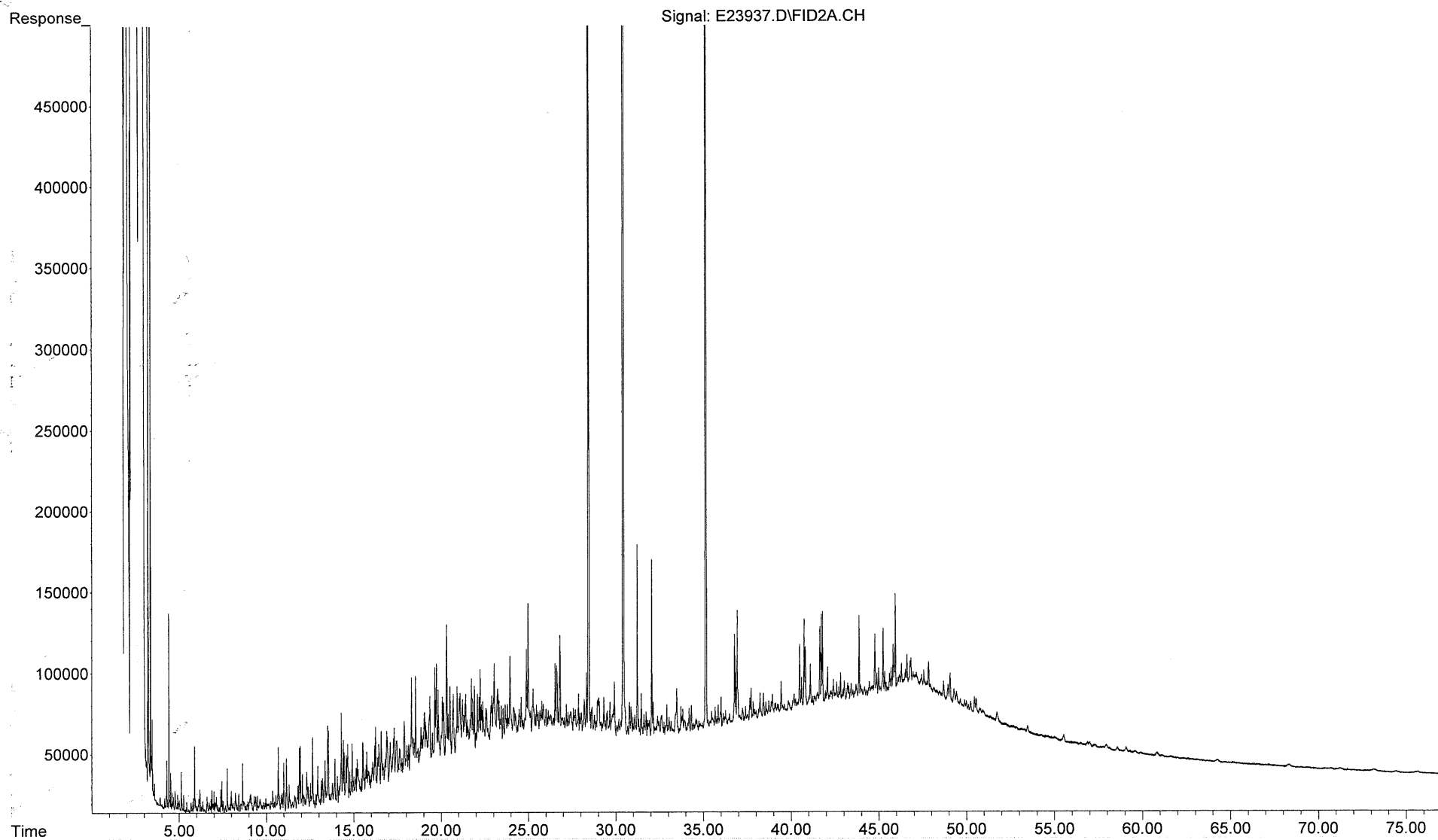
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Instrument : PAH 2
Acquired : 03-Mar-2012 3:47 am using AcqMethod FRNC2A.M
Sample Name: L1203300-02,42
Misc Info : WG522566,WG522240

Parking Lot CB Sediment
L1203300-02



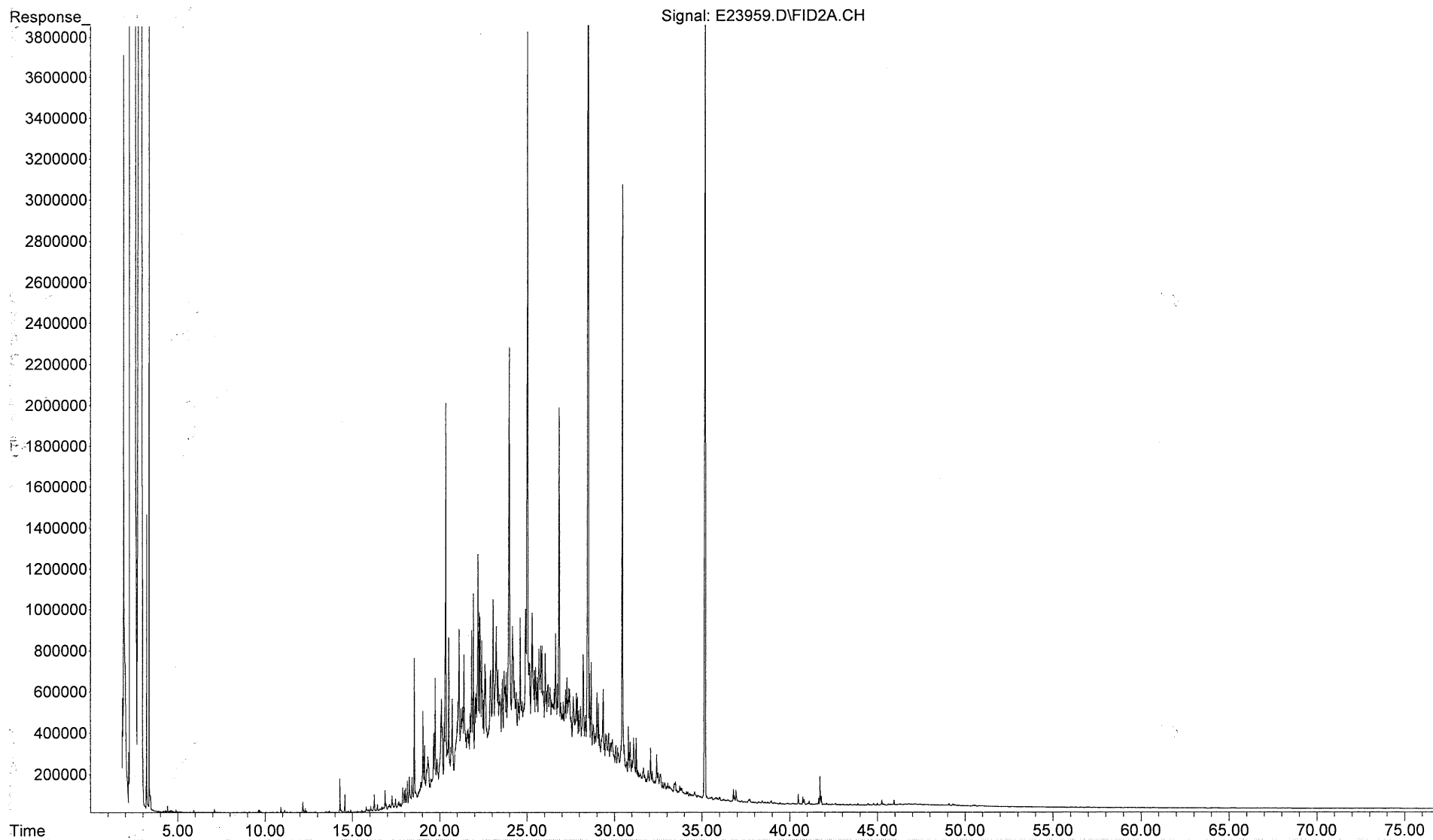
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Instrument : PAH 2
Acquired : 02 Mar 2012 12:46 pm using AcqMethod FRNC2A.M
Sample Name: L1203300-03,42
Misc Info : WG521698,WG520699

Parking Lot CB Water
L1203300-03



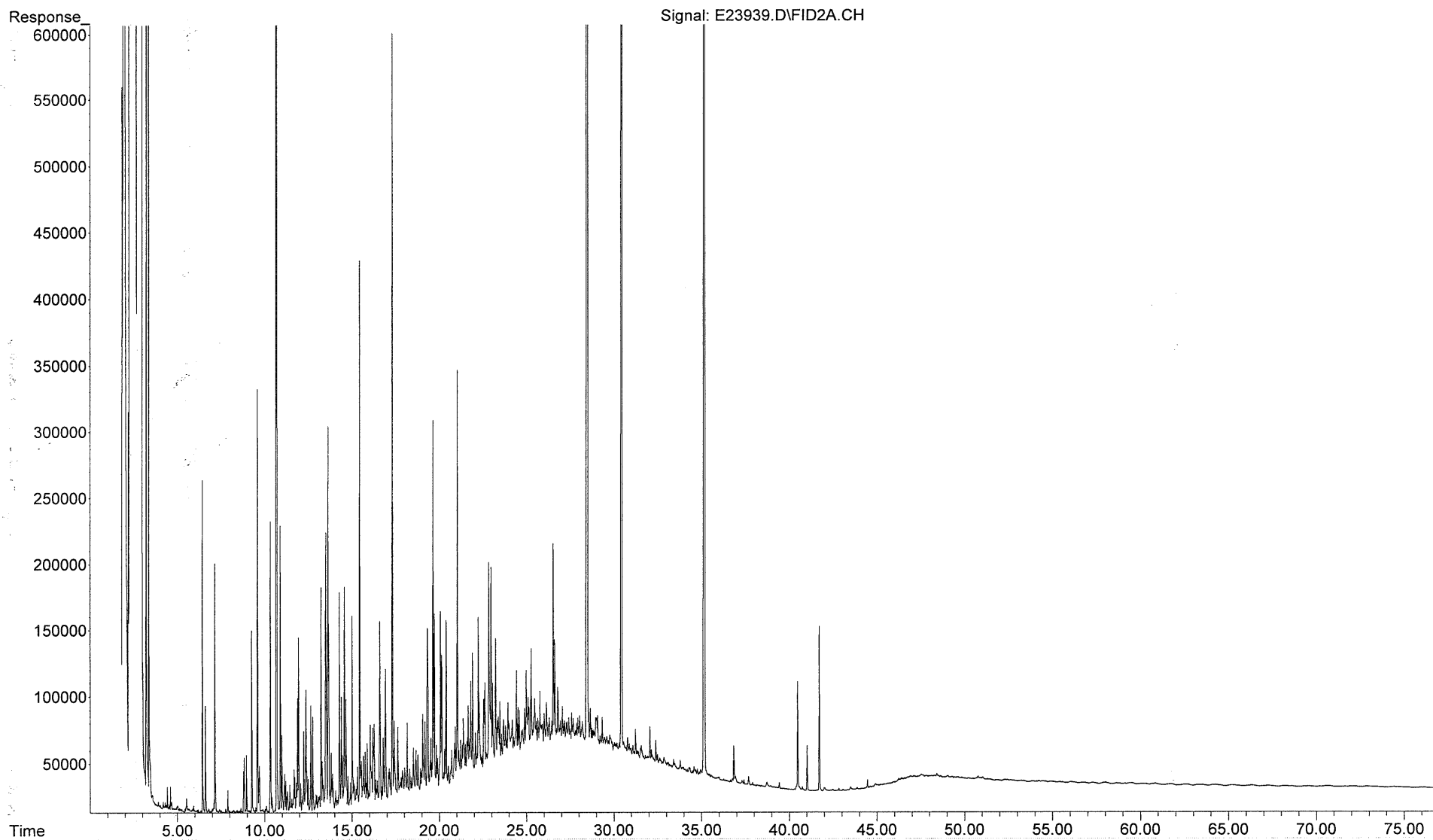
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Instrument : PAH 2
Acquired : 03 Mar 2012 5:17 am using AcqMethod FRNC2A.M
Sample Name: L1203300-04,42
Misc Info : WG522566,WG522240

**Oil Water Separator Sheen
L1203300-04**



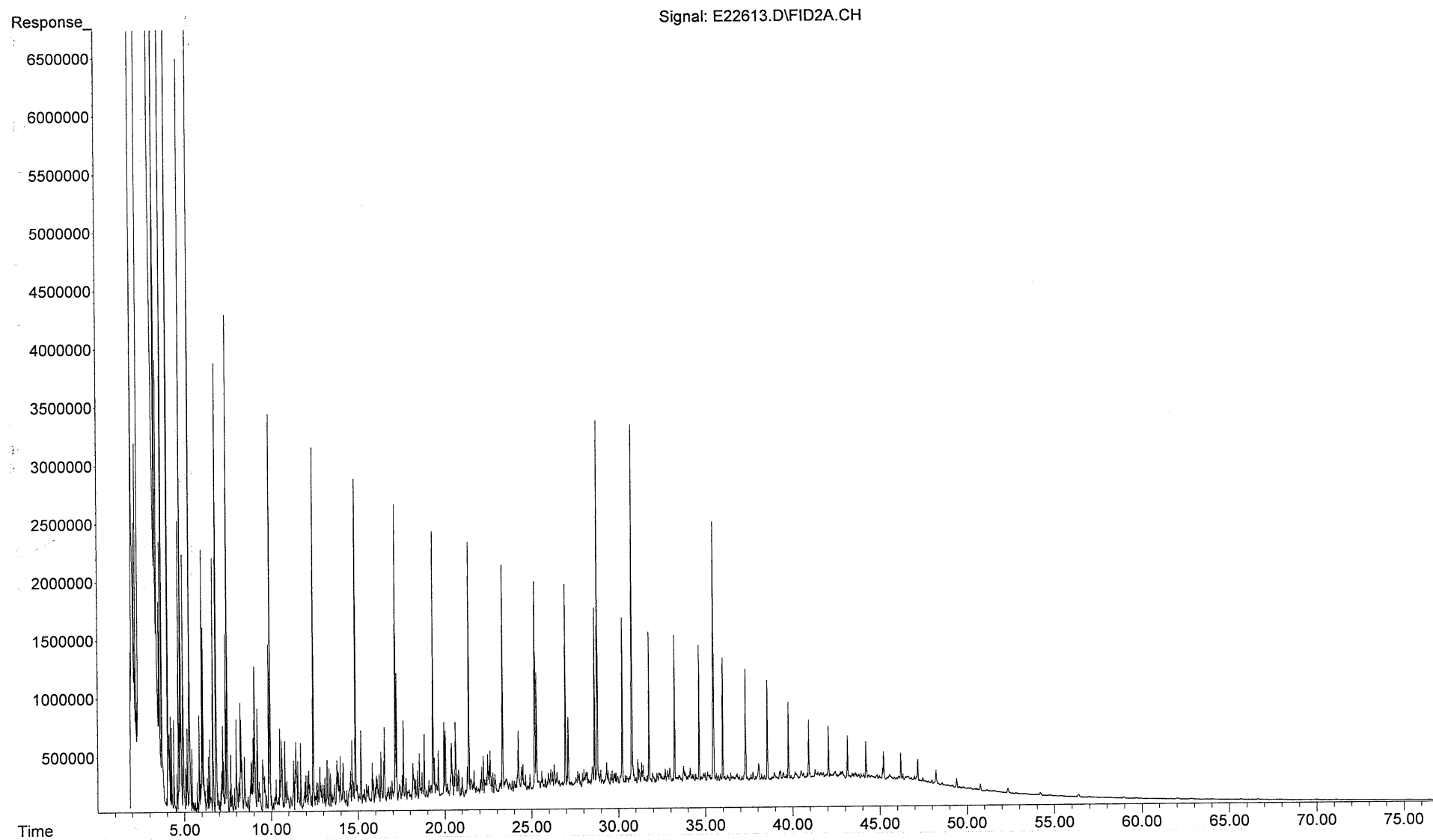
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Instrument : PAH 2
Acquired : 02 Mar 2012 2:22 pm using AcqMethod FRNC2A.M
Sample Name: L1203300-05,42
Misc Info : WG521698,WG520699

Oil Water Separator Water
L1203300-05



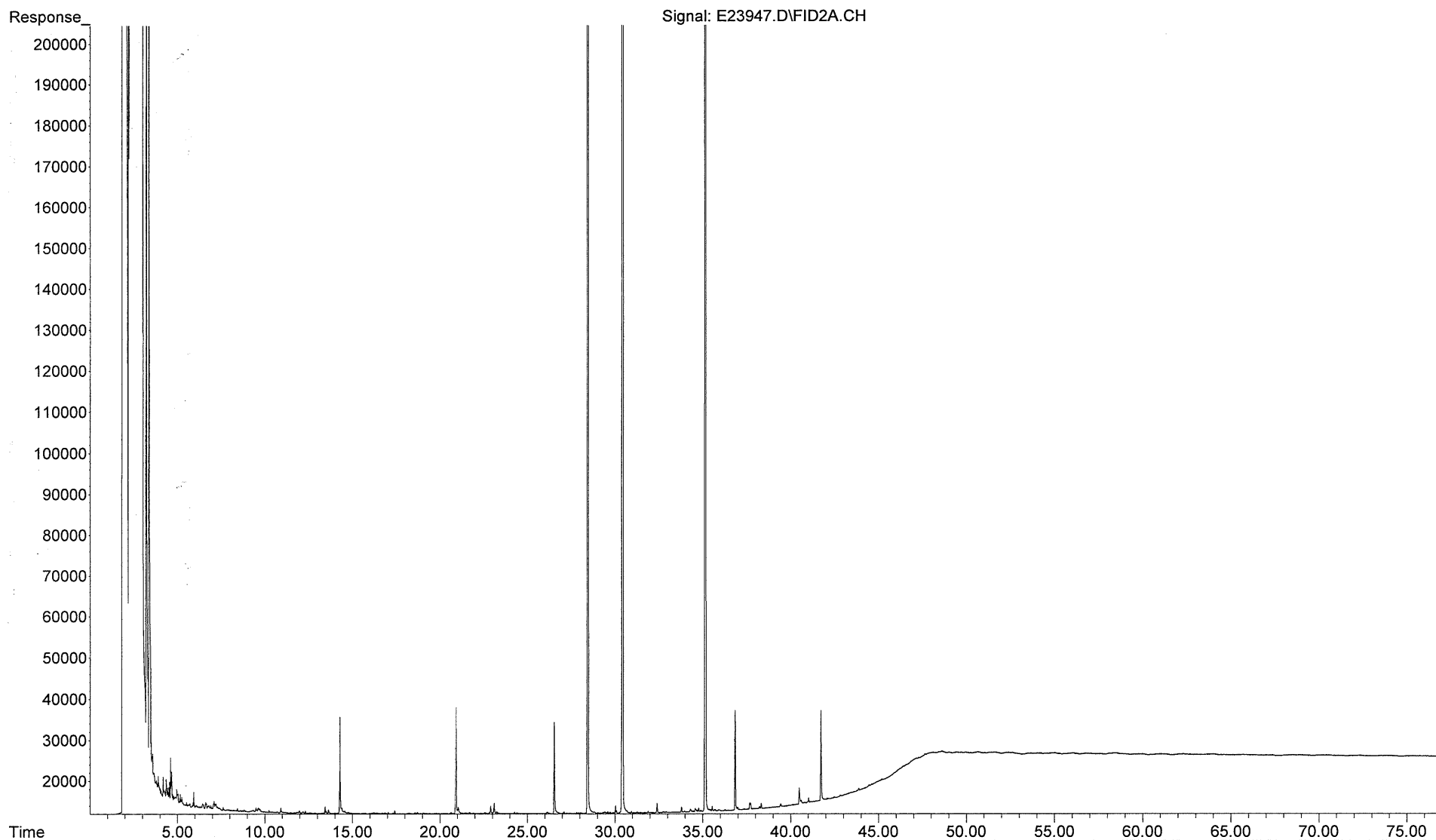
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Instrument : PAH 2
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Sample Name: TS011712ANS01
Misc Info : 1X WHAM98

**Reference Standard
North Slope Crude**



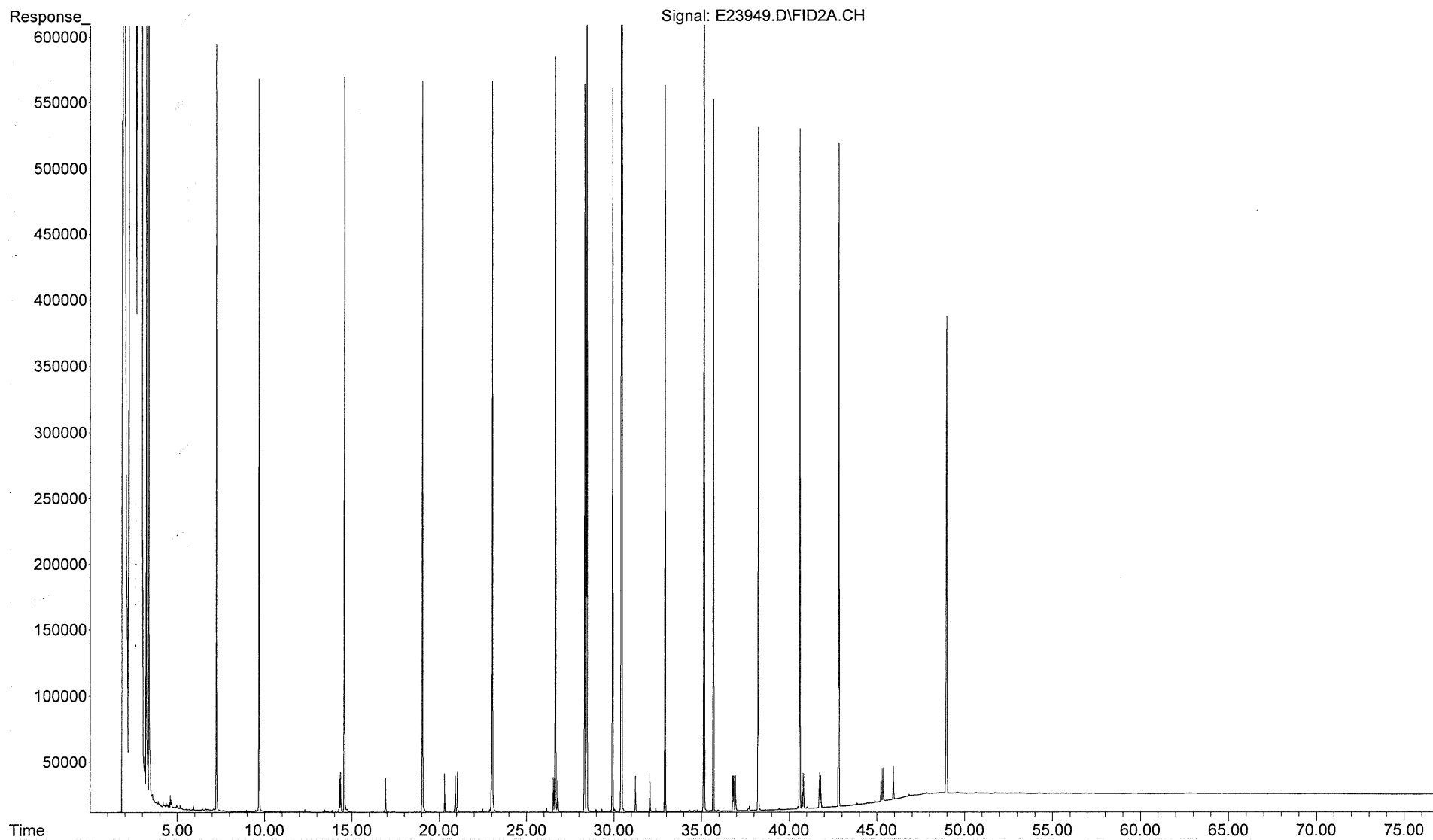
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Sample Name: WG522240-1,42
Misc Info : WG522566,WG522240

Method Blank
WG522240-1



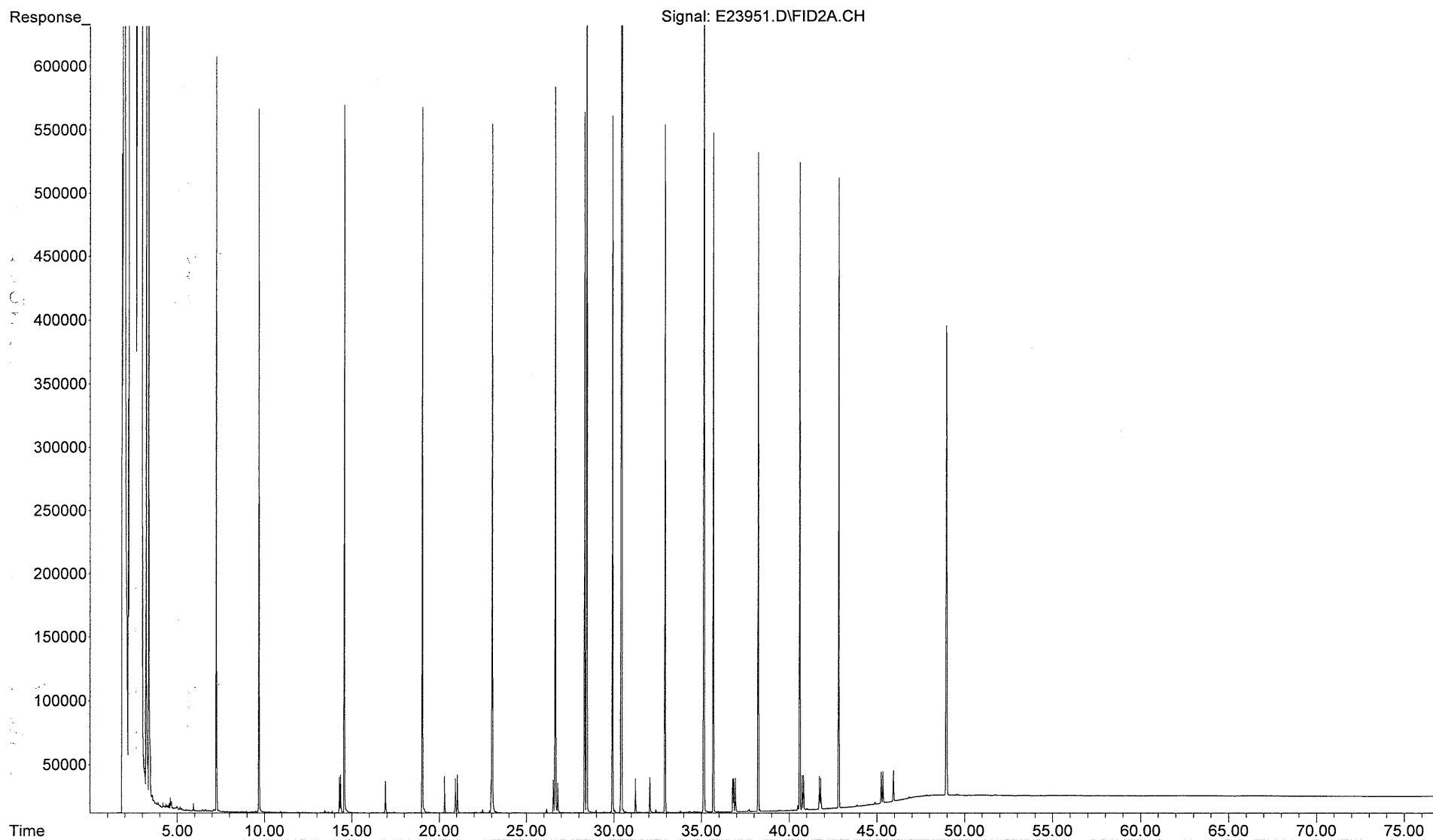
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Sample Name: WG522240-2,42
Misc Info : WG522566,WG522240

**Lab Control Sample
WG522240-2**



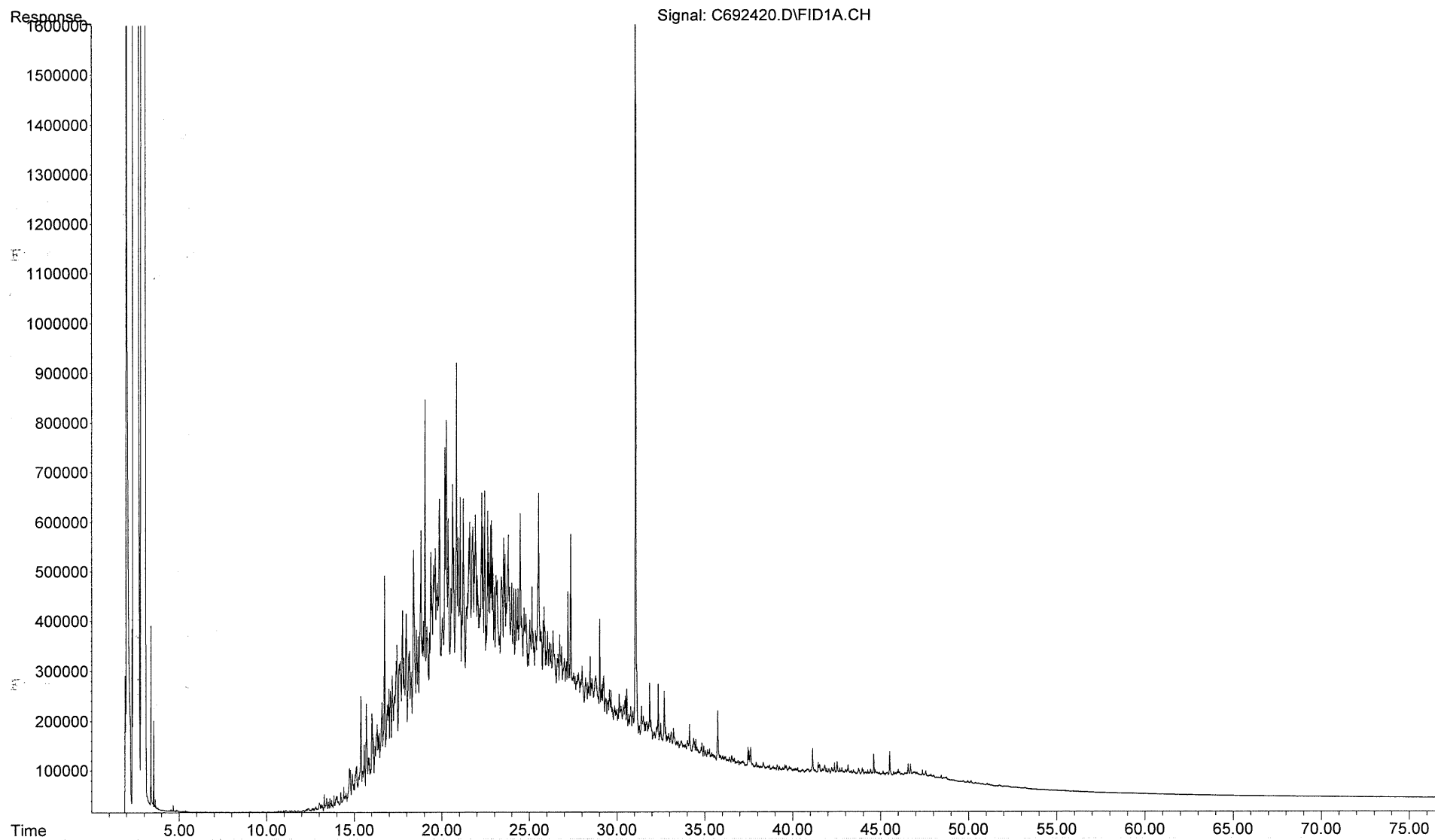
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Instrument : PAH 2
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Sample Name: WG522240-3,42
Misc Info : WG522566,WG522240

Lab Control Sample Duplicate
WG522240-3



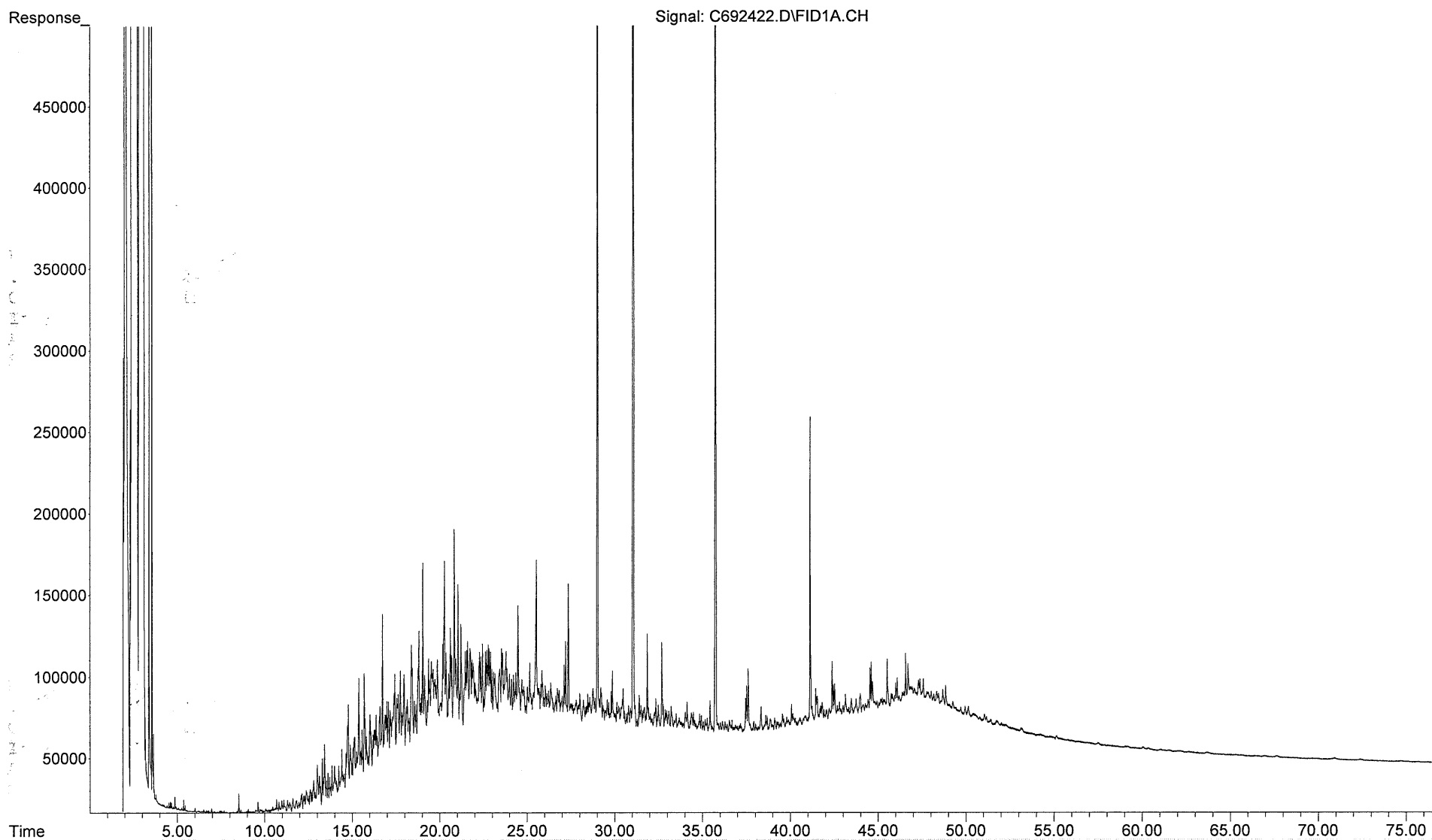
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Sample Name: L1204030-01,42
Misc Info : WG522724,WG522464

CB#1
L1204030-01



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Sample Name: L1204030-02,42
Misc Info : WG522724,WG522464

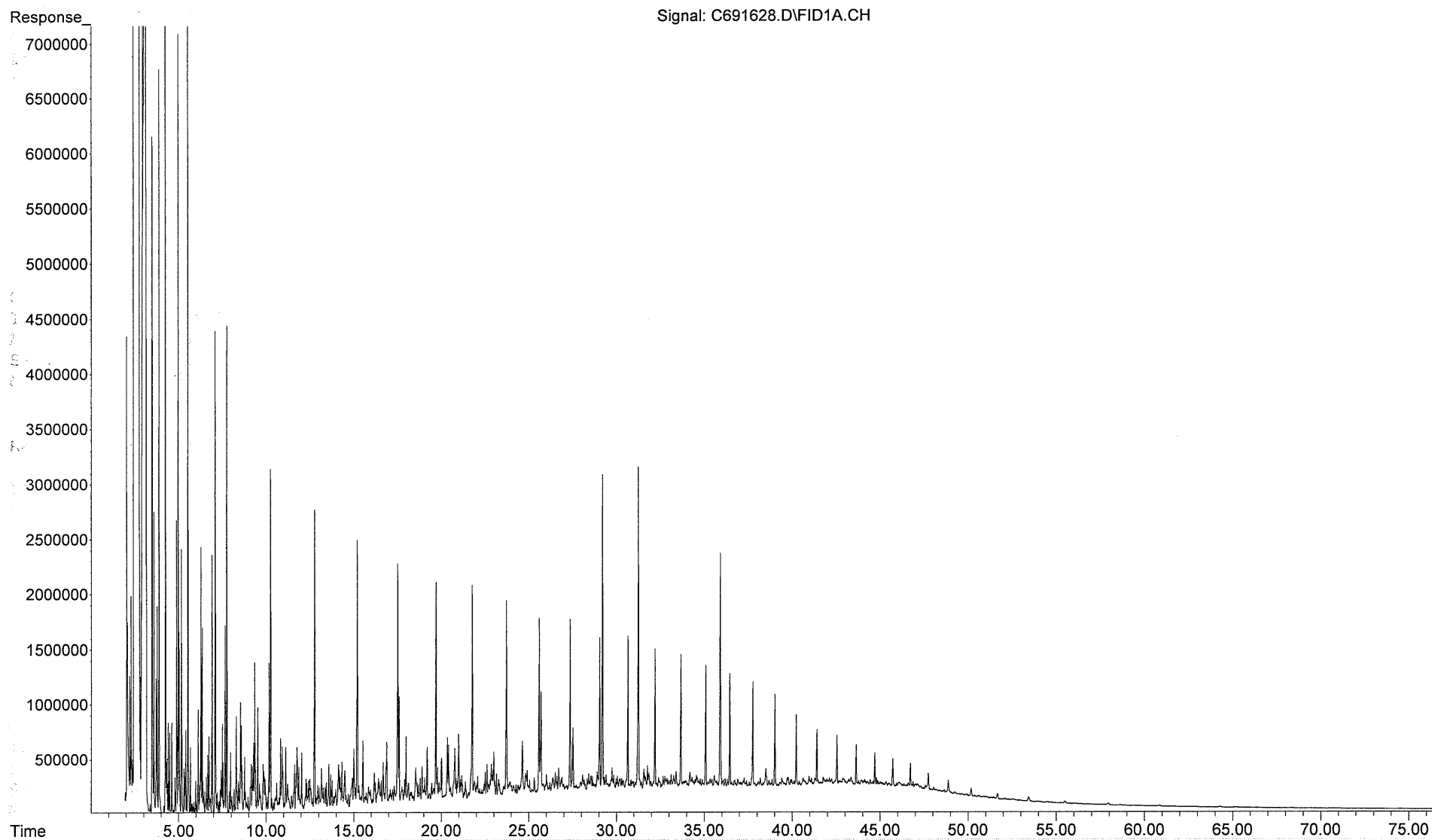
CB#2
L1204030-02



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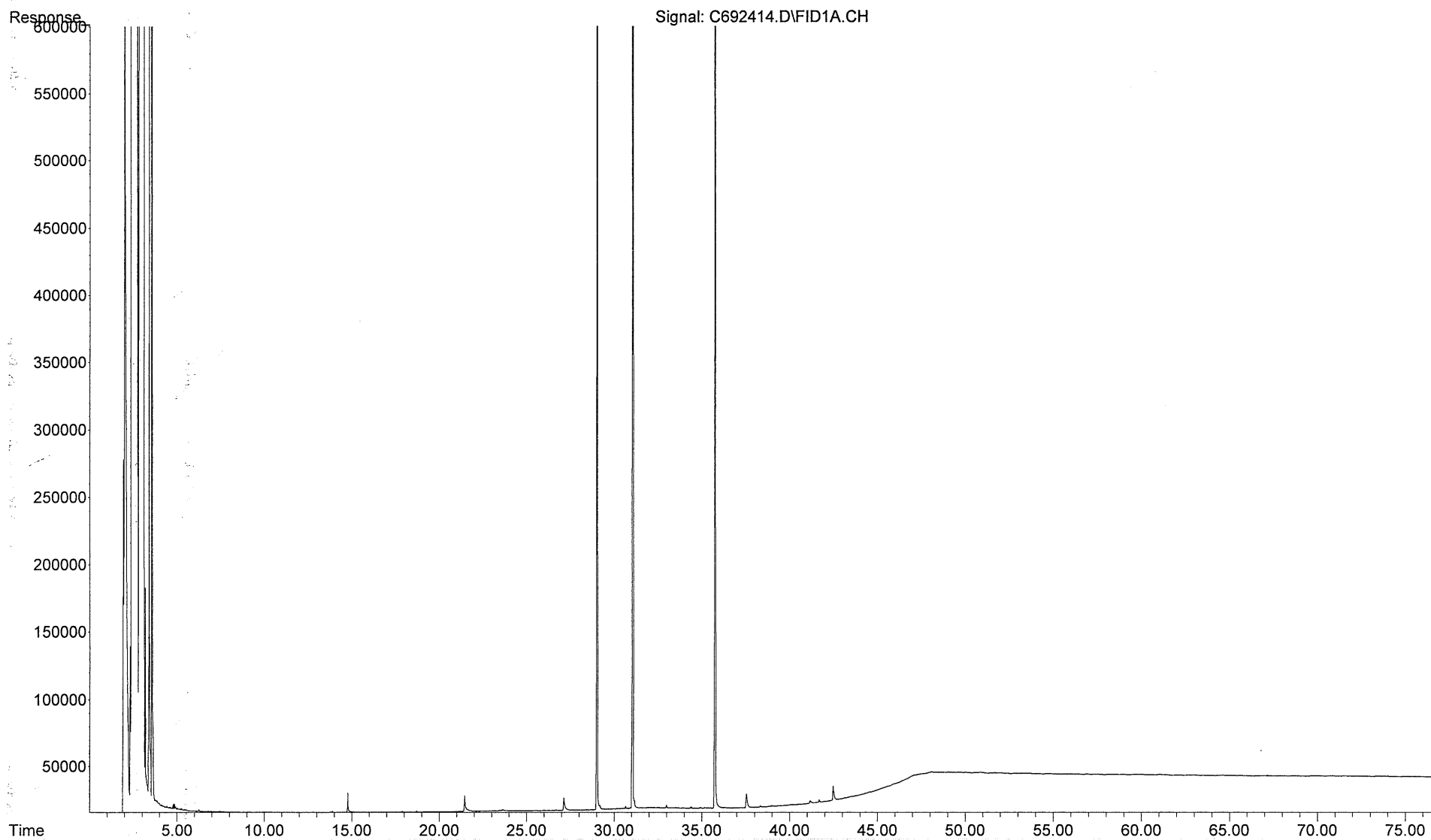
Operator : BAL
Instrument : FID6
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Sample Name: TS022712ANS04
Misc Info : 1X WHAM98

**Reference Standard
North Slope Crude**



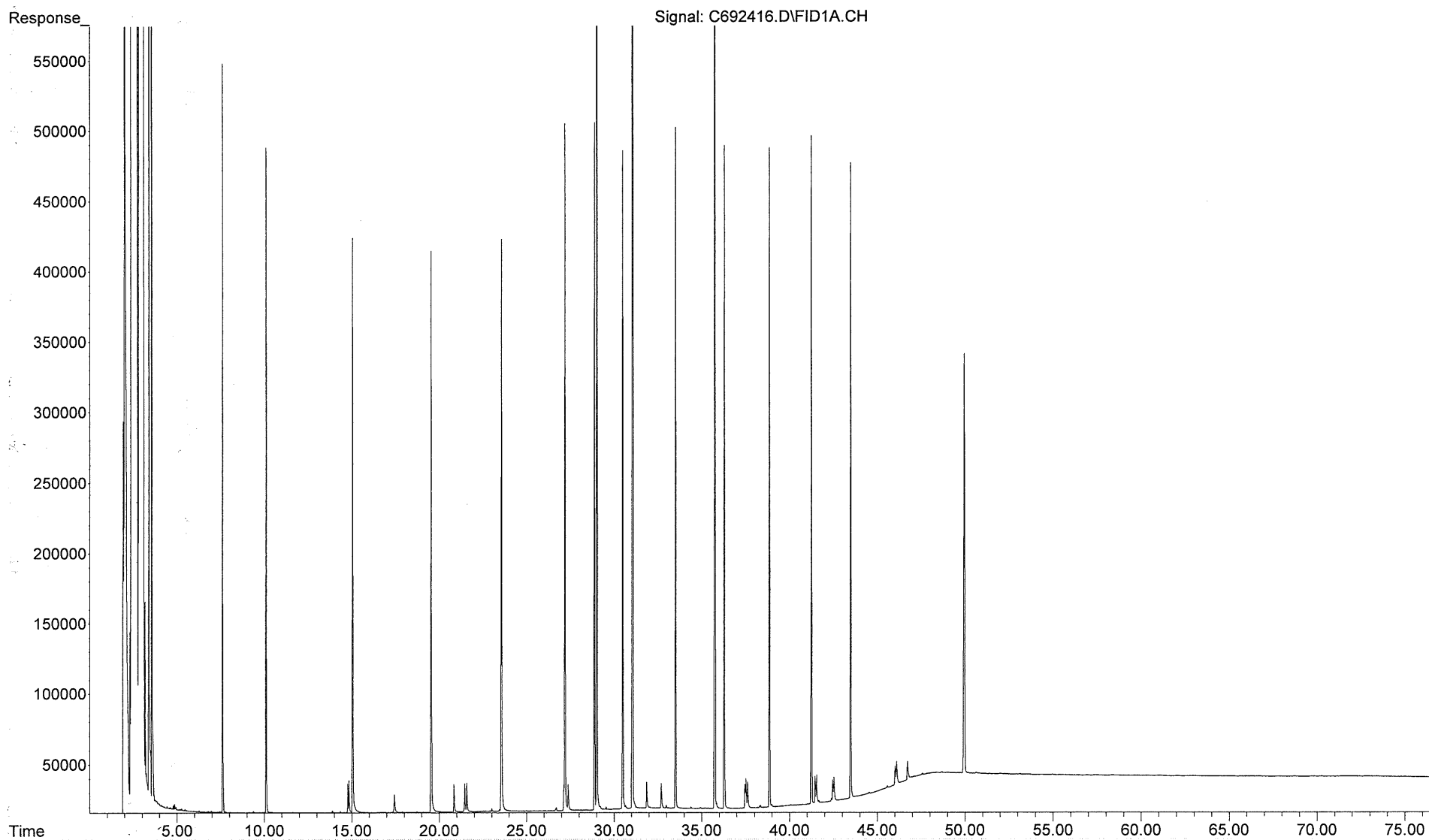
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Sample Name: WG522464-1,42
Misc Info : WG522724,WG522464

Method Blank
WG52240-1



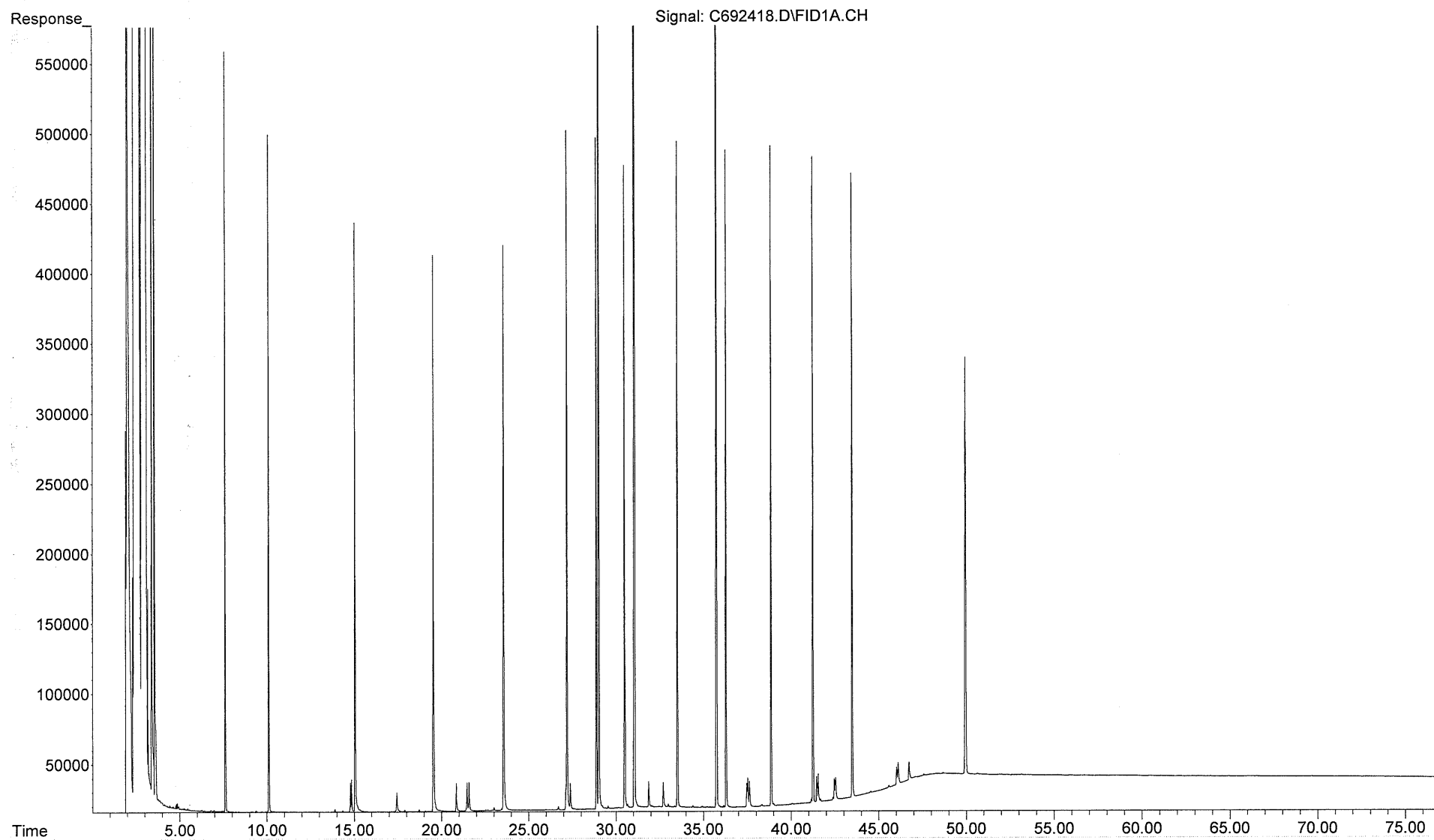
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Instrument : FID6
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Sample Name: WG522464-2,42
Misc Info : WG522724,WG522464

Lab Control Sample
WG52240-2



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Operator : FID6:BAL
Instrument : FID6
Acquired : 12 Mar 2012 4:35 pm using AcqMethod FID6A.M
Sample Name: WG522464-3,42
Misc Info : WG522724,WG522464

Lab Control Sample Duplicate
WG52240-3



Data Tables

TPH Data



Project Name: 642 ALLENS AVENUE
 Project Number: 33554

| | Laboratory Method | | Laboratory Method | |
|---------------------------------------|-------------------|-------------|-------------------|-------------|
| Client ID | Blank | | Blank | |
| Lab ID | WG520699-1 | | WG522240-1 | |
| Matrix | WATER | | SOLID | |
| Matrix Description | | | | |
| Reference Method | 8015D(M) | | 8015D(M) | |
| Batch ID | WG520699 | | WG522240 | |
| Date Collected | NA | | NA | |
| Date Received | 2/29/2012 | | 3/9/2012 | |
| Date Prepped | 2/29/2012 | | 2/29/2012 | |
| Date Analyzed | 3/2/2012 | | 3/2/2012 | |
| Sample Size(wet) | 1050 ml | | 0.04 g | |
| % Solid | 100 | | 100 | |
| File ID | E23929 | | E23947 | |
| Units | mg/l | | mg/kg | |
| Final Volume | 2 | | 2 | |
| Dilution | 1 | | 1 | |
| Reporting Limit | 0.0628 | | 1650 | |
| <u>Analytes</u> | <u>Result</u> | <u>SSRL</u> | <u>Result</u> | <u>SSRL</u> |
| TOTAL PETROLEUM HYDROCARBONS (C9-C44) | U | 0.063 | U | 1650 |
| Surrogates (% Recovery) | | | | |
| O-TERPHENYL | 98 | | 100 | |
| D50-TETRACOSANE | 94 | | 95 | |



Project Name: 642 ALLENS AVENUE
 Project Number: 33554

| | |
|--------------------|--------------------|
| | Laboratory Control |
| Client ID | Sample |
| Lab ID | WG520699-2 |
| Matrix | WATER |
| Matrix Description | |
| Reference Method | 8015D(M) |
| Batch ID | WG520699 |
| Date Collected | NA |
| Date Received | 2/29/2012 |
| Date Prepped | 2/29/2012 |
| Date Analyzed | 3/2/2012 |
| Sample Size(wet) | 1050 ml |
| % Solid | 100 |
| File ID | E23931 |
| Units | % |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0019 |

| Class | Abbrev | Analytes | Result | SSRL | % REC | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|-----------------------|--------|-------|-------|-------------|-------------|-------------|
| SHC | C9 | NONANE (C9) | 0.0125 | 0.002 | 66 | 0.0190 | 50 | 130 |
| SHC | C10 | DECANE (C10) | 0.0136 | 0.002 | 71 | 0.0190 | 50 | 130 |
| SHC | C12 | DODECANE (C12) | 0.0151 | 0.002 | 79 | 0.0190 | 50 | 130 |
| SHC | C14 | TETRADECANE (C14) | 0.0169 | 0.002 | 89 | 0.0190 | 50 | 130 |
| SHC | C16 | HEXADECANE (C16) | 0.0175 | 0.002 | 92 | 0.0190 | 50 | 130 |
| SHC | C18 | OCTADECANE (C18) | 0.0188 | 0.002 | 99 | 0.0190 | 50 | 130 |
| SHC | C19 | NONADECANE (C19) | 0.0177 | 0.002 | 93 | 0.0190 | 50 | 130 |
| SHC | C20 | EICOSANE (C20) | 0.0177 | 0.002 | 93 | 0.0190 | 50 | 130 |
| SHC | C22 | DOCOSANE (C22) | 0.0175 | 0.002 | 92 | 0.0190 | 50 | 130 |
| SHC | C24 | TETRACOSANE (C24) | 0.0174 | 0.002 | 91 | 0.0190 | 50 | 130 |
| SHC | C26 | HEXACOSANE (C26) | 0.0172 | 0.002 | 90 | 0.0190 | 50 | 130 |
| SHC | C28 | OCTACOSANE (C28) | 0.0172 | 0.002 | 90 | 0.0190 | 50 | 130 |
| SHC | C30 | TRIACONTANE (C30) | 0.0172 | 0.002 | 90 | 0.0190 | 50 | 130 |
| SHC | C36 | HEXATRIACONTANE (C36) | 0.0167 | 0.002 | 88 | 0.0190 | 50 | 130 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| O-TERPHENYL | 93 |
| D50-TETRACOSANE | 89 |



Project Name: 642 ALLENS AVENUE
 Project Number: 33554

| | |
|--------------------|---------------|
| Client ID | LCS Duplicate |
| Lab ID | WG520699-3 |
| Matrix | WATER |
| Matrix Description | |
| Reference Method | 8015D(M) |
| Batch ID | WG520699 |
| Date Collected | NA |
| Date Received | 2/29/2012 |
| Date Prepped | 2/29/2012 |
| Date Analyzed | 3/2/2012 |
| Sample Size(wet) | 1050 ml |
| % Solid | 100 |
| File ID | E23933 |
| Units | % |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0019 |

| Class | Abbrev | Analytes | Result | SSRL | % REC | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|-----------------------|--------|-------|-------|-------------|-------------|-------------|-----|-----------|
| SHC | C9 | NONANE (C9) | 0.0125 | 0.002 | 66 | 0.0190 | 50 | 130 | 0 | 30 |
| SHC | C10 | DECANE (C10) | 0.0135 | 0.002 | 71 | 0.0190 | 50 | 130 | 0 | 30 |
| SHC | C12 | DODECANE (C12) | 0.0150 | 0.002 | 79 | 0.0190 | 50 | 130 | 0 | 30 |
| SHC | C14 | TETRADECANE (C14) | 0.0172 | 0.002 | 90 | 0.0190 | 50 | 130 | 1 | 30 |
| SHC | C16 | HEXADECANE (C16) | 0.0186 | 0.002 | 98 | 0.0190 | 50 | 130 | 6 | 30 |
| SHC | C18 | OCTADECANE (C18) | 0.0202 | 0.002 | 106 | 0.0190 | 50 | 130 | 7 | 30 |
| SHC | C19 | NONADECANE (C19) | 0.0190 | 0.002 | 100 | 0.0190 | 50 | 130 | 7 | 30 |
| SHC | C20 | EICOSANE (C20) | 0.0190 | 0.002 | 100 | 0.0190 | 50 | 130 | 7 | 30 |
| SHC | C22 | DOCOSANE (C22) | 0.0189 | 0.002 | 99 | 0.0190 | 50 | 130 | 7 | 30 |
| SHC | C24 | TETRACOSANE (C24) | 0.0188 | 0.002 | 99 | 0.0190 | 50 | 130 | 8 | 30 |
| SHC | C26 | HEXACOSANE (C26) | 0.0186 | 0.002 | 98 | 0.0190 | 50 | 130 | 9 | 30 |
| SHC | C28 | OCTACOSANE (C28) | 0.0187 | 0.002 | 98 | 0.0190 | 50 | 130 | 9 | 30 |
| SHC | C30 | TRIACONTANE (C30) | 0.0187 | 0.002 | 98 | 0.0190 | 50 | 130 | 9 | 30 |
| SHC | C36 | HEXATRIACONTANE (C36) | 0.0179 | 0.002 | 94 | 0.0190 | 50 | 130 | 7 | 30 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| O-TERPHENYL | 98 |
| D50-TETRACOSANE | 94 |



Project Name: 642ALLENS AVENUE
 Project Number: 33554

| | |
|--------------------|--------------------|
| | Laboratory Control |
| Client ID | Sample |
| Lab ID | WG522240-2 |
| Matrix | SOLID |
| Matrix Description | |
| Reference Method | 8015D(M) |
| Batch ID | WG522240 |
| Date Collected | NA |
| Date Received | 3/9/2012 |
| Date Prepped | 2/29/2012 |
| Date Analyzed | 3/2/2012 |
| Sample Size(wet) | 0.04 g |
| % Solid | 100 |
| File ID | E23949 |
| Units | % |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 50.0 |

| Class | Abbrev | Analytes | Result | SSRL | % REC | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|-----------------------|--------|------|-------|-------------|-------------|-------------|
| SHC | C9 | NONANE (C9) | 432 | 50.0 | 86 | 500 | 50 | 130 |
| SHC | C10 | DECANE (C10) | 466 | 50.0 | 93 | 500 | 50 | 130 |
| SHC | C12 | DODECANE (C12) | 500 | 50.0 | 100 | 500 | 50 | 130 |
| SHC | C14 | TETRADECANE (C14) | 510 | 50.0 | 102 | 500 | 50 | 130 |
| SHC | C16 | HEXADECANE (C16) | 510 | 50.0 | 102 | 500 | 50 | 130 |
| SHC | C18 | OCTADECANE (C18) | 544 | 50.0 | 109 | 500 | 50 | 130 |
| SHC | C19 | NONADECANE (C19) | 508 | 50.0 | 102 | 500 | 50 | 130 |
| SHC | C20 | EICOSANE (C20) | 507 | 50.0 | 101 | 500 | 50 | 130 |
| SHC | C22 | DOCOSANE (C22) | 501 | 50.0 | 100 | 500 | 50 | 130 |
| SHC | C24 | TETRACOSANE (C24) | 497 | 50.0 | 99 | 500 | 50 | 130 |
| SHC | C26 | HEXACOSANE (C26) | 491 | 50.0 | 98 | 500 | 50 | 130 |
| SHC | C28 | OCTACOSANE (C28) | 489 | 50.0 | 98 | 500 | 50 | 130 |
| SHC | C30 | TRIACONTANE (C30) | 490 | 50.0 | 98 | 500 | 50 | 130 |
| SHC | C36 | HEXATRIACONTANE (C36) | 473 | 50.0 | 95 | 500 | 50 | 130 |

| | |
|-------------------------|-----|
| Surrogates (% Recovery) | |
| O-TERPHENYL | 100 |
| D50-TETRACOSANE | 95 |



Project Name: 642ALLENS AVENUE
 Project Number: 33554

Client ID
 Lab ID LCS Duplicate
 Matrix WG522240-3
 Matrix Description SOLID
 Reference Method 8015D(M)
 Batch ID WG522240
 Date Collected NA
 Date Received 3/9/2012
 Date Prepped 2/29/2012
 Date Analyzed 3/2/2012
 Sample Size(wet) 0.04 g
 % Solid 100
 File ID E23951
 Units %
 Final Volume 2
 Dilution 1
 Reporting Limit 50.0

| Class | Abbrev | Analytes | Result | SSRL | % REC | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|-----------------------|--------|------|-------|-------------|-------------|-------------|-----|-----------|
| SHC | C9 | NONANE (C9) | 448 | 50.0 | 90 | 500 | 50 | 130 | 5 | 30 |
| SHC | C10 | DECANE (C10) | 470 | 50.0 | 94 | 500 | 50 | 130 | 1 | 30 |
| SHC | C12 | DODECANE (C12) | 495 | 50.0 | 99 | 500 | 50 | 130 | 1 | 30 |
| SHC | C14 | TETRADECANE (C14) | 506 | 50.0 | 101 | 500 | 50 | 130 | 1 | 30 |
| SHC | C16 | HEXADECANE (C16) | 508 | 50.0 | 102 | 500 | 50 | 130 | 0 | 30 |
| SHC | C18 | OCTADECANE (C18) | 543 | 50.0 | 108 | 500 | 50 | 130 | 1 | 30 |
| SHC | C19 | NONADECANE (C19) | 508 | 50.0 | 102 | 500 | 50 | 130 | 0 | 30 |
| SHC | C20 | EICOSANE (C20) | 507 | 50.0 | 101 | 500 | 50 | 130 | 0 | 30 |
| SHC | C22 | DOCOSANE (C22) | 501 | 50.0 | 100 | 500 | 50 | 130 | 0 | 30 |
| SHC | C24 | TETRACOSANE (C24) | 498 | 50.0 | 100 | 500 | 50 | 130 | 1 | 30 |
| SHC | C26 | HEXACOSANE (C26) | 491 | 50.0 | 98 | 500 | 50 | 130 | 0 | 30 |
| SHC | C28 | OCTACOSANE (C28) | 490 | 50.0 | 98 | 500 | 50 | 130 | 0 | 30 |
| SHC | C30 | TRIACONTANE (C30) | 492 | 50.0 | 98 | 500 | 50 | 130 | 0 | 30 |
| SHC | C36 | HEXATRIACONTANE (C36) | 479 | 50.0 | 96 | 500 | 50 | 130 | 1 | 30 |

Surrogates (% Recovery)
 O-TERPHENYL 100
 D50-TETRACOSANE 95



Project Name: 642 ALLENS AVENUE
 Project Number: 33554

| | PARKING LOT CB | PARKING LOT CB | PARKING LOT CB | OIL WATER | | | | |
|---------------------------------------|----------------|----------------|----------------|-------------|--------|-------|--------|------|
| | L1203300-01 | L1203300-02 | L1203300-03 | SEPARATOR | | | | |
| | SOLID | SOLID | WATER | L1203300-04 | | | | |
| | Net | Sediment | Net | SOLID | | | | |
| Client ID | | | | Net | | | | |
| Lab ID | | | | 8015D(M) | | | | |
| Matrix | | | | WG522240 | | | | |
| Matrix Description | | | | 2/24/2012 | | | | |
| Reference Method | 8015D(M) | 8015D(M) | 8015D(M) | 2/27/2012 | | | | |
| Batch ID | WG522240 | WG522240 | WG520699 | 2/29/2012 | | | | |
| Date Collected | 2/24/2012 | 2/24/2012 | 2/24/2012 | 3/3/2012 | | | | |
| Date Received | 2/27/2012 | 2/27/2012 | 2/27/2012 | 0.00816 g | | | | |
| Date Prepped | 2/29/2012 | 2/29/2012 | 2/29/2012 | 100 | | | | |
| Date Analyzed | 3/3/2012 | 3/3/2012 | 3/2/2012 | E23955 | | | | |
| Sample Size(wet) | 0.01248 g | 0.10464 g | 1050 ml | E23957 | | | | |
| % Solid | 100 | 100 | 100 | E23937 | | | | |
| File ID | E23955 | E23957 | E23937 | E23959 | | | | |
| Units | mg/kg | mg/kg | mg/l | mg/kg | | | | |
| Final Volume | 4 | 16 | 8 | 2 | | | | |
| Dilution | 1 | 1 | 1 | 1 | | | | |
| Reporting Limit | 10600 | 5040 | 0.251 | 8090 | | | | |
| Analytes | Result | SSRL | Result | SSRL | Result | SSRL | Result | SSRL |
| TOTAL PETROLEUM HYDROCARBONS (C9-C44) | 587000 | 10600 | 860000 | 5040 | 9.47 | 0.251 | 917000 | 8090 |
| Surrogates (% Recovery) | | | | | | | | |
| O-TERPHENYL | 96 | | 106 | | 92 | | 106 | |
| D50-TETRACOSANE | 90 | | 99 | | 89 | | 98 | |



Project Name: 642 ALLENS AVENUE
Project Number: 33554

| | |
|--------------------|-------------|
| Client ID | OIL WATER |
| Lab ID | SEPARATOR |
| Matrix | L1203300-05 |
| Matrix Description | WATER |
| Reference Method | 8015D(M) |
| Batch ID | WG520699 |
| Date Collected | 2/24/2012 |
| Date Received | 2/27/2012 |
| Date Prepped | 2/29/2012 |
| Date Analyzed | 3/2/2012 |
| Sample Size(wet) | 1050 ml |
| % Solid | 100 |
| File ID | E23939 |
| Units | mg/l |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0628 |

| Analytes | Result | SSRL |
|---------------------------------------|--------|-------|
| TOTAL PETROLEUM HYDROCARBONS (C9-C44) | 1.64 | 0.063 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| O-TERPHENYL | 97 |
| D50-TETRACOSANE | 92 |



List of Potential Qualifiers

A: Spectra identified as "Aldol Condensation Product".

B: The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C: Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses

D: Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E: Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G: The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.

H: The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I: The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.

J: Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL). This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M: Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND: Not detected at the method detection limit (MDL) for the sample.

NJ: Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P: The RPD between the results for the two columns exceeds the method-specified criteria.

Q: The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL (Metals only.)

R: Analytical results are from sample re-analysis.

RE: Analytical results are from sample re-extraction.

U: Not detected at the reported detection limit for the sample.



Project Name: 642 ALLENS AVENUE
Project Number: 33554

| | |
|--------------------|-------------------|
| Client ID | Laboratory Method |
| Lab ID | Blank |
| Matrix | WG522464-1 |
| Matrix Description | SOLID |
| Reference Method | 8015D(M) |
| Batch ID | WG522464 |
| Date Collected | NA |
| Date Received | 3/12/2012 |
| Date Prepped | 3/12/2012 |
| Date Analyzed | 3/12/2012 |
| Sample Size(wet) | 0.3 g |
| % Solid | 100 |
| File ID | C692414 |
| Units | mg/kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 220 |

| Analytes | Result | SSRL |
|---------------------------------------|--------|------|
| TOTAL PETROLEUM HYDROCARBONS (C9-C44) | U | 220 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| O-TERPHENYL | 96 |
| D50-TETRACOSANE | 93 |



Project Name: 642 ALLENS AVENUE
 Project Number: 33554

| | |
|--------------------|--------------------|
| Client ID | Laboratory Control |
| Lab ID | Sample |
| Matrix | WG522464-2 |
| Matrix Description | SOLID |
| Reference Method | 8015D(M) |
| Batch ID | WG522464 |
| Date Collected | NA |
| Date Received | 3/12/2012 |
| Date Prepped | 3/12/2012 |
| Date Analyzed | 3/12/2012 |
| Sample Size(wet) | 0.3 g |
| % Solid | 100 |
| File ID | C692416 |
| Units | % |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 6.67 |

| Class | Abbrev | Analytes | Result | SSRL | % REC | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|-----------------------|--------|------|-------|-------------|-------------|-------------|
| SHC | C9 | NONANE (C9) | 56.8 | 6.67 | 85 | 66.7 | 50 | 130 |
| SHC | C10 | DECANE (C10) | 57.5 | 6.67 | 86 | 66.7 | 50 | 130 |
| SHC | C12 | DODECANE (C12) | 60.0 | 6.67 | 90 | 66.7 | 50 | 130 |
| SHC | C14 | TETRADECANE (C14) | 60.0 | 6.67 | 90 | 66.7 | 50 | 130 |
| SHC | C16 | HEXADECANE (C16) | 64.6 | 6.67 | 97 | 66.7 | 50 | 130 |
| SHC | C18 | OCTADECANE (C18) | 67.7 | 6.67 | 102 | 66.7 | 50 | 130 |
| SHC | C19 | NONADECANE (C19) | 62.8 | 6.67 | 94 | 66.7 | 50 | 130 |
| SHC | C20 | EICOSANE (C20) | 63.7 | 6.67 | 96 | 66.7 | 50 | 130 |
| SHC | C22 | DOCOSANE (C22) | 63.7 | 6.67 | 96 | 66.7 | 50 | 130 |
| SHC | C24 | TETRACOSANE (C24) | 64.2 | 6.67 | 96 | 66.7 | 50 | 130 |
| SHC | C26 | HEXACOSANE (C26) | 63.3 | 6.67 | 95 | 66.7 | 50 | 130 |
| SHC | C28 | OCTACOSANE (C28) | 63.6 | 6.67 | 95 | 66.7 | 50 | 130 |
| SHC | C30 | TRIACONTANE (C30) | 64.4 | 6.67 | 97 | 66.7 | 50 | 130 |
| SHC | C36 | HEXATRIACONTANE (C36) | 62.8 | 6.67 | 94 | 66.7 | 50 | 130 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| O-TERPHENYL | 96 |
| D50-TETRACOSANE | 91 |



Project Name: 642 ALLENS AVENUE
 Project Number: 33554

Client ID LCS Duplicate
 Lab ID WG522464-3
 Matrix SOLID
 Matrix Description
 Reference Method 8015D(M)
 Batch ID WG522464
 Date Collected NA
 Date Received 3/12/2012
 Date Prepped 3/12/2012
 Date Analyzed 3/12/2012
 Sample Size(wet) 0.3 g
 % Solid 100
 File ID C692418
 Units %
 Final Volume 2
 Dilution 1
 Reporting Limit 6.67

| Class | Abbrev | Analytes | Result | SSRL | % REC | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|-----------------------|--------|------|-------|-------------|-------------|-------------|-----|-----------|
| SHC | C9 | NONANE (C9) | 57.2 | 6.67 | 86 | 66.7 | 50 | 130 | 1 | 30 |
| SHC | C10 | DECANE (C10) | 58.0 | 6.67 | 87 | 66.7 | 50 | 130 | 1 | 30 |
| SHC | C12 | DODECANE (C12) | 60.2 | 6.67 | 90 | 66.7 | 50 | 130 | 0 | 30 |
| SHC | C14 | TETRADECANE (C14) | 60.3 | 6.67 | 90 | 66.7 | 50 | 130 | 0 | 30 |
| SHC | C16 | HEXADECANE (C16) | 63.7 | 6.67 | 96 | 66.7 | 50 | 130 | 1 | 30 |
| SHC | C18 | OCTADECANE (C18) | 66.8 | 6.67 | 100 | 66.7 | 50 | 130 | 2 | 30 |
| SHC | C19 | NONADECANE (C19) | 61.8 | 6.67 | 93 | 66.7 | 50 | 130 | 1 | 30 |
| SHC | C20 | EICOSANE (C20) | 62.6 | 6.67 | 94 | 66.7 | 50 | 130 | 2 | 30 |
| SHC | C22 | DOCOSANE (C22) | 62.6 | 6.67 | 94 | 66.7 | 50 | 130 | 2 | 30 |
| SHC | C24 | TETRACOSANE (C24) | 63.0 | 6.67 | 94 | 66.7 | 50 | 130 | 2 | 30 |
| SHC | C26 | HEXACOSANE (C26) | 62.2 | 6.67 | 93 | 66.7 | 50 | 130 | 2 | 30 |
| SHC | C28 | OCTACOSANE (C28) | 62.4 | 6.67 | 94 | 66.7 | 50 | 130 | 1 | 30 |
| SHC | C30 | TRIACONTANE (C30) | 63.2 | 6.67 | 95 | 66.7 | 50 | 130 | 2 | 30 |
| SHC | C36 | HEXATRIACONTANE (C36) | 61.9 | 6.67 | 93 | 66.7 | 50 | 130 | 1 | 30 |

Surrogates (% Recovery)
 O-TERPHENYL 94
 D50-TETRACOSANE 90



Project Name: 642 ALLENS AVENUE
 Project Number: 33554

| | | |
|--------------------|-------------|-------------|
| Client ID | CB#1 | CB#2 |
| Lab ID | L1204030-01 | L1204030-02 |
| Matrix | SOLID | SOLID |
| Matrix Description | | |
| Reference Method | 8015D(M) | 8015D(M) |
| Batch ID | WG522464 | WG522464 |
| Date Collected | 3/7/2012 | 3/7/2012 |
| Date Received | 3/8/2012 | 3/8/2012 |
| Date Prepped | 3/12/2012 | 3/12/2012 |
| Date Analyzed | 3/12/2012 | 3/12/2012 |
| Sample Size(wet) | 0.5176 g | 0.0448 g |
| % Solid | 100 | 100 |
| File ID | C692420 | C692422 |
| Units | mg/kg | mg/kg |
| Final Volume | 100 | 11.11 |
| Dilution | 1 | 1 |
| Reporting Limit | 6380 | 8180 |

| Analytes | Result | SSRL | Result | SSRL |
|---------------------------------------|--------|------|--------|------|
| TOTAL PETROLEUM HYDROCARBONS (C9-C44) | 712000 | 6380 | 322000 | 8180 |

| | | |
|-------------------------|-----|----|
| Surrogates (% Recovery) | | |
| O-TERPHENYL | 123 | 95 |
| D50-TETRACOSANE | 120 | 94 |



List of Potential Qualifiers

A: Spectra identified as "Aldol Condensation Product".

B: The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C: Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses

D: Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E: Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G: The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.

H: The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I: The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.

J: Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL). This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M: Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND: Not detected at the method detection limit (MDL) for the sample.

NJ: Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P: The RPD between the results for the two columns exceeds the method-specified criteria.

Q: The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL (Metals only.)

R: Analytical results are from sample re-analysis.

RE: Analytical results are from sample re-extraction.

U: Not detected at the reported detection limit for the sample.

PAH and Biomarker Data



Project Name: GZA-642 Allens Ave
Project Number:

| | | |
|-------------------|----------------|----------------|
| Client ID | Method Blank | Method Blank |
| Lab ID | SS032312B05 | SW032312B06 |
| Matrix | Solid | Water |
| Reference Method | Modified 8270C | Modified 8270C |
| Batch ID | SS032312B05 | SW032312B06 |
| Date Collected | N/A | N/A |
| Date Received | N/A | N/A |
| Date Prepped | 02/29/2012 | 02/29/2012 |
| Date Analyzed | 03/26/2012 | 03/28/2012 |
| Sample Size (wet) | 0.04 | 1050 |
| % Solid | 100.00 | 100.00 |
| File ID | a810152.D | a810172.D |
| Units | mg/Kg | ng/L |
| Final Volume | 2 | 2 |
| Dilution | 1 | 1 |
| Reporting Limit | 0.500 | 19.0 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL |
|-------|--------|---|---------|---------|--------|--------|
| 2 | D0 | cis/trans-Decalin | U | 0.500 | U | 19.0 |
| 2 | D1 | C1-Decalins | U | 0.500 | U | 19.0 |
| 2 | D2 | C2-Decalins | U | 0.500 | U | 19.0 |
| 2 | D3 | C3-Decalins | U | 0.500 | U | 19.0 |
| 2 | D4 | C4-Decalins | U | 0.500 | U | 19.0 |
| 2 | BT0 | Benzothiophene | U | 0.500 | U | 19.0 |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 0.500 | U | 19.0 |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 0.500 | U | 19.0 |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 0.500 | U | 19.0 |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 0.500 | U | 19.0 |
| 2 | N0 | Naphthalene | 0.0362 | J 0.500 | 2.56 | J 19.0 |
| 2 | N1 | C1-Naphthalenes | 0.0540 | J 0.500 | 2.74 | J 19.0 |
| 2 | N2 | C2-Naphthalenes | U | 0.500 | U | 19.0 |
| 2 | N3 | C3-Naphthalenes | U | 0.500 | U | 19.0 |
| 2 | N4 | C4-Naphthalenes | U | 0.500 | U | 19.0 |
| 2 | B | Biphenyl | U | 0.500 | 0.958 | J 19.0 |
| 3 | DF | Dibenzofuran | U | 0.500 | U | 19.0 |
| 3 | AY | Acenaphthylene | 0.0841 | J 0.500 | 1.04 | J 19.0 |
| 3 | AE | Acenaphthene | 0.0322 | J 0.500 | U | 19.0 |
| 3 | F0 | Fluorene | U | 0.500 | U | 19.0 |
| 3 | F1 | C1-Fluorenes | U | 0.500 | U | 19.0 |
| 3 | F2 | C2-Fluorenes | U | 0.500 | U | 19.0 |
| 3 | F3 | C3-Fluorenes | U | 0.500 | U | 19.0 |
| 3 | A0 | Anthracene | U | 0.500 | U | 19.0 |
| 3 | P0 | Phenanthrene | 0.0215 | J 0.500 | 1.40 | J 19.0 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 0.500 | U | 19.0 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 0.500 | U | 19.0 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 0.500 | U | 19.0 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 0.500 | U | 19.0 |
| 3 | RET | Retene | U | 0.500 | U | 19.0 |
| 3 | DBT0 | Dibenzothiophene | 0.00915 | J 0.500 | 0.977 | J 19.0 |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 0.500 | 4.55 | J 19.0 |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 0.500 | 9.29 | J 19.0 |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 0.500 | U | 19.0 |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 0.500 | U | 19.0 |
| 4 | BF | Benzo(b)fluorene | U | 0.500 | U | 19.0 |
| 4 | FL0 | Fluoranthene | U | 0.500 | U | 19.0 |
| 4 | PY0 | Pyrene | U | 0.500 | U | 19.0 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 0.500 | U | 19.0 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 0.500 | U | 19.0 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 0.500 | U | 19.0 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 0.500 | U | 19.0 |
| 4 | NBT0 | Naphthobenzothiophenes | U | 0.500 | U | 19.0 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 0.500 | U | 19.0 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 0.500 | U | 19.0 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 0.500 | U | 19.0 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 0.500 | U | 19.0 |
| 4 | BA0 | Benz[aj]anthracene | U | 0.500 | U | 19.0 |
| 4 | C0 | Chrysene/Triphenylene | 0.0181 | J 0.500 | U | 19.0 |
| 4 | BC1 | C1-Chrysenes | U | 0.500 | U | 19.0 |
| 4 | BC2 | C2-Chrysenes | U | 0.500 | U | 19.0 |
| 4 | BC3 | C3-Chrysenes | U | 0.500 | U | 19.0 |
| 4 | BC4 | C4-Chrysenes | U | 0.500 | U | 19.0 |
| 5 | BBF | Benzo[b]fluoranthene | U | 0.500 | U | 19.0 |
| 5 | BJKF | Benzo[j]fluoranthene/Benzo[k]fluoranthene | U | 0.500 | U | 19.0 |
| 5 | BAF | Benzo[a]fluoranthene | U | 0.500 | U | 19.0 |
| 5 | BEP | Benzo[e]pyrene | U | 0.500 | U | 19.0 |
| 5 | BAP | Benzo[a]pyrene | U | 0.500 | U | 19.0 |
| 5 | PER | Perylene | U | 0.500 | U | 19.0 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | U | 0.500 | U | 19.0 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | U | 0.500 | U | 19.0 |
| 6 | GHI | Benzo[g,h,i]perylene | U | 0.500 | U | 19.0 |
| 6 | CAR | Carbazole | U | 0.500 | U | 19.0 |
| 3 | 4MDT | 4-Methylidibenzothiophene | U | 0.500 | 0.935 | J 19.0 |
| 3 | 2MDT | 2/3-Methylidibenzothiophene | U | 0.500 | U | 19.0 |
| 3 | 1MDT | 1-Methylidibenzothiophene | U | 0.500 | 1.88 | J 19.0 |
| 3 | 3MP | 3-Methylphenanthrene | U | 0.500 | U | 19.0 |
| 3 | 2MP | 2/4-Methylphenanthrene | U | 0.500 | U | 19.0 |
| 3 | 2MA | 2-Methylanthracene | U | 0.500 | U | 19.0 |
| 3 | 9MP | 9-Methylphenanthrene | U | 0.500 | U | 19.0 |
| 3 | 1MP | 1-Methylphenanthrene | U | 0.500 | U | 19.0 |



Project Name: GZA-642 Allens Ave
Project Number:

| | | |
|-------------------|----------------|----------------|
| Client ID | Method Blank | Method Blank |
| Lab ID | SS032312B05 | SW032312B06 |
| Matrix | Solid | Water |
| Reference Method | Modified 8270C | Modified 8270C |
| Batch ID | SS032312B05 | SW032312B06 |
| Date Collected | N/A | N/A |
| Date Received | N/A | N/A |
| Date Prepped | 02/29/2012 | 02/29/2012 |
| Date Analyzed | 03/26/2012 | 03/28/2012 |
| Sample Size (wet) | 0.04 | 1050 |
| % Solid | 100.00 | 100.00 |
| File ID | a810152.D | a810172.D |
| Units | mg/Kg | ng/L |
| Final Volume | 2 | 2 |
| Dilution | 1 | 1 |
| Reporting Limit | 0.500 | 19.0 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL |
|-------------|-------------|--|--------|-------|--------|------|
| t23 | T4 | C23 Tricyclic Terpene | U | 0.500 | U | 19.0 |
| t24 | T5 | C24 Tricyclic Terpene | U | 0.500 | U | 19.0 |
| t25 | T6 | C25 Tricyclic Terpene | U | 0.500 | U | 19.0 |
| te24 | T6a | C24 Tetracyclic Terpene | U | 0.500 | U | 19.0 |
| t26S | T6b | C26 Tricyclic Terpene-22S | U | 0.500 | U | 19.0 |
| t26R | T6c | C26 Tricyclic Terpene-22R | U | 0.500 | U | 19.0 |
| t28S | T7 | C28 Tricyclic Terpene-22S | U | 0.500 | U | 19.0 |
| t28R | T8 | C28 Tricyclic Terpene-22R | U | 0.500 | U | 19.0 |
| t29S | T9 | C29 Tricyclic Terpene-22S | U | 0.500 | U | 19.0 |
| t29R | T10 | C29 Tricyclic Terpene-22R | U | 0.500 | U | 19.0 |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | U | 0.500 | U | 19.0 |
| t30S | T11a | C30 Tricyclic Terpene-22S | U | 0.500 | U | 19.0 |
| t30R | T11b | C30 Tricyclic Terpene-22R | U | 0.500 | U | 19.0 |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | U | 0.500 | U | 19.0 |
| BNH | T14a | 17a/b,21b/a,28,30-Bisnorhopane | U | 0.500 | U | 19.0 |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | U | 0.500 | U | 19.0 |
| H29 | T15 | 30-Norhopane | U | 0.500 | U | 19.0 |
| C29Ts | T16 | 18a(H)-30-Norhopane-C29Ts | U | 0.500 | U | 19.0 |
| X | X | 17a(H)-Diahopane | U | 0.500 | U | 19.0 |
| M29 | T17 | 30-Normoretane | U | 0.500 | U | 19.0 |
| OL | T18 | 18a(H)&18b(H)-Oleananes | U | 0.500 | U | 19.0 |
| H30 | T19 | Hopane | U | 0.500 | U | 19.0 |
| M30 | T20 | Moretane | U | 0.500 | U | 19.0 |
| H31S | T21 | 30-Homohopane-22S | U | 0.500 | U | 19.0 |
| H31R | T22 | 30-Homohopane-22R | U | 0.500 | U | 19.0 |
| H32S | T26 | 30,31-Bishomohopane-22S | U | 0.500 | U | 19.0 |
| H32R | T27 | 30,31-Bishomohopane-22R | U | 0.500 | U | 19.0 |
| H33R | T30 | 30,31-Trishomohopane-22S | U | 0.500 | U | 19.0 |
| H33S | T31 | 30,31-Trishomohopane-22R | U | 0.500 | U | 19.0 |
| H34R | T32 | Tetrakishomohopane-22S | U | 0.500 | U | 19.0 |
| H34S | T33 | Tetrakishomohopane-22R | U | 0.500 | U | 19.0 |
| H35S | T34 | Pentakishomohopane-22S | U | 0.500 | U | 19.0 |
| H35R | T35 | Pentakishomohopane-22R | U | 0.500 | U | 19.0 |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | U | 0.500 | U | 19.0 |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | U | 0.500 | U | 19.0 |
| d28S | S8 | 13b,17a-20S-Methylcholestane | U | 0.500 | U | 19.0 |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethylcholestane (S12) | U | 0.500 | U | 19.0 |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethylcholestane (S17) | U | 0.500 | U | 19.0 |
| d29R | S18 | Unknown Sterane (S18) | U | 0.500 | U | 19.0 |
| d29S | S19 | 13a,17b-20S-Ethylcholestane | U | 0.500 | U | 19.0 |
| aa28S | S20 | 14a,17a-20S-Methylcholestane | U | 0.500 | U | 19.0 |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | U | 0.500 | U | 19.0 |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethylcholestane | U | 0.500 | U | 19.0 |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethylcholestane | U | 0.500 | U | 19.0 |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | U | 0.500 | U | 19.0 |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | U | 0.500 | U | 19.0 |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | U | 0.500 | U | 19.0 |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | U | 0.500 | U | 19.0 |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethylcholestane | U | 0.500 | U | 19.0 |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethylcholestane | U | 0.500 | U | 19.0 |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | U | 0.500 | U | 19.0 |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | U | 0.500 | U | 19.0 |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | U | 0.500 | U | 19.0 |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | U | 0.500 | U | 19.0 |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | U | 0.500 | U | 19.0 |

Surrogates (% Recovery)

| | | |
|--------------------|-----|-----|
| Naphthalene-d8 | 73 | 72 |
| Phenanthrene-d10 | 99 | 99 |
| Benzo[a]pyrene-d12 | 83 | 84 |
| 5B(H)Cholane | N/A | N/A |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------|
| Client ID | Laboratory Control |
| Lab ID | Sample |
| Matrix | SW032312LCS05 |
| Reference Method | Water |
| Batch ID | Modified 8270C |
| Date Collected | SW032312B06 |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/29/2012 |
| Sample Size (wet) | 03/28/2012 |
| % Solid | 1050 |
| File ID | 100.00 |
| Units | a810173.D |
| Final Volume | ng/L |
| Dilution | 2 |
| Reporting Limit | 1 |
| | 19.0 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|--|--------|------|-------|-------------|-------------|-------------|
| 2 | D0 | cis/trans-Decalin | U | 19.0 | | | | |
| 2 | D1 | C1-Decalins | U | 19.0 | | | | |
| 2 | D2 | C2-Decalins | U | 19.0 | | | | |
| 2 | D3 | C3-Decalins | U | 19.0 | | | | |
| 2 | D4 | C4-Decalins | U | 19.0 | | | | |
| 2 | BT0 | Benzo(ghi)perylene | U | 19.0 | | | | |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 19.0 | | | | |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 19.0 | | | | |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 19.0 | | | | |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 19.0 | | | | |
| 2 | N0 | Naphthalene | 779 | S | 19.0 | 82 | 952 | 50 130 |
| 2 | N1 | C1-Naphthalenes | U | 19.0 | | | | |
| 2 | N2 | C2-Naphthalenes | U | 19.0 | | | | |
| 2 | N3 | C3-Naphthalenes | U | 19.0 | | | | |
| 2 | N4 | C4-Naphthalenes | U | 19.0 | | | | |
| 2 | B | Biphenyl | U | 19.0 | | | | |
| 3 | DF | Dibenzofuran | U | 19.0 | | | | |
| 3 | AY | Acenaphthylene | 877 | S | 19.0 | 92 | 952 | 50 130 |
| 3 | AE | Acenaphthene | 902 | S | 19.0 | 95 | 952 | 50 130 |
| 3 | F0 | Fluorene | 877 | S | 19.0 | 92 | 952 | 50 130 |
| 3 | F1 | C1-Fluorenes | U | 19.0 | | | | |
| 3 | F2 | C2-Fluorenes | U | 19.0 | | | | |
| 3 | F3 | C3-Fluorenes | U | 19.0 | | | | |
| 3 | A0 | Anthracene | 877 | S | 19.0 | 92 | 952 | 50 130 |
| 3 | P0 | Phenanthrene | 873 | S | 19.0 | 92 | 952 | 50 130 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 19.0 | | | | |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 19.0 | | | | |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 19.0 | | | | |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 19.0 | | | | |
| 3 | RET | Retene | U | 19.0 | | | | |
| 3 | DBT0 | Dibenzothiophene | U | 19.0 | | | | |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 19.0 | | | | |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 19.0 | | | | |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 19.0 | | | | |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 19.0 | | | | |
| 4 | BF | Benzo(b)fluorene | U | 19.0 | | | | |
| 4 | FL0 | Fluoranthene | 931 | S | 19.0 | 98 | 952 | 50 130 |
| 4 | PY0 | Pyrene | 985 | S | 19.0 | 103 | 952 | 50 130 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 19.0 | | | | |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 19.0 | | | | |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 19.0 | | | | |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 19.0 | | | | |
| 4 | NBT0 | Naphthobenzothiophenes | U | 19.0 | | | | |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 19.0 | | | | |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 19.0 | | | | |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 19.0 | | | | |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 19.0 | | | | |
| 4 | BA0 | Benzo[a]anthracene | 848 | S | 19.0 | 89 | 952 | 50 130 |
| 4 | C0 | Chrysene/Triphenylene | 928 | S | 19.0 | 97 | 952 | 50 130 |
| 4 | BC1 | C1-Chrysenes | U | 19.0 | | | | |
| 4 | BC2 | C2-Chrysenes | U | 19.0 | | | | |
| 4 | BC3 | C3-Chrysenes | U | 19.0 | | | | |
| 4 | BC4 | C4-Chrysenes | U | 19.0 | | | | |
| 5 | BBF | Benzo[b]fluoranthene | 750 | S | 19.0 | 79 | 952 | 50 130 |
| 5 | BKJF | Benzo[k]fluoranthene/Benzo[k]fluoranthene | 992 | S | 19.0 | 104 | 952 | 50 130 |
| 5 | BAF | Benzo[a]fluoranthene | U | 19.0 | | | | |
| 5 | BEP | Benzo[e]pyrene | U | 19.0 | | | | |
| 5 | BAP | Benzo[a]pyrene | 877 | S | 19.0 | 92 | 952 | 50 130 |
| 5 | PER | Perylene | U | 19.0 | | | | |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 765 | S | 19.0 | 80 | 952 | 50 130 |
| 6 | DA | Dibenz[a,h]anthracene/Dibenz[ac]anthracene | 764 | S | 19.0 | 80 | 952 | 50 130 |
| 6 | GHI | Benzo[ghi]perylene | 778 | S | 19.0 | 82 | 952 | 50 130 |
| 6 | CAR | Carbazole | U | 19.0 | | | | |
| 3 | 4MDT | 4-Methylidibenzothiophene | U | 19.0 | | | | |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | U | 19.0 | | | | |
| 3 | 1MDT | 1-Methyldibenzothiophene | U | 19.0 | | | | |
| 3 | 3MP | 3-Methylphenanthrene | U | 19.0 | | | | |
| 3 | 2MP | 2/4-Methylphenanthrene | U | 19.0 | | | | |
| 3 | 2MA | 2-Methylanthracene | U | 19.0 | | | | |
| 3 | 9MP | 9-Methylphenanthrene | U | 19.0 | | | | |
| 3 | 1MP | 1-Methylphenanthrene | U | 19.0 | | | | |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------|
| Client ID | Laboratory Control |
| Lab ID | Sample |
| Matrix | SW032312LCS05 |
| Reference Method | Water |
| Batch ID | Modified 8270C |
| Date Collected | SW032312806 |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/29/2012 |
| Sample Size (wet) | 03/28/2012 |
| % Solid | 1050 |
| File ID | 100.00 |
| Units | a810173.D |
| Final Volume | ng/L |
| Dilution | 2 |
| Reporting Limit | 1 |
| | 19.0 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------------|-------------|--|--------|------|-------|-------------|-------------|-------------|
| t23 | T4 | C23 Tricyclic Terpene | U | 19.0 | | | | |
| t24 | T5 | C24 Tricyclic Terpene | U | 19.0 | | | | |
| t25 | T6 | C25 Tricyclic Terpene | U | 19.0 | | | | |
| te24 | T6a | C24 Tetracyclic Terpene | U | 19.0 | | | | |
| t26S | T6b | C26 Tricyclic Terpene-22S | U | 19.0 | | | | |
| t26R | T6c | C26 Tricyclic Terpene-22R | U | 19.0 | | | | |
| t28S | T7 | C28 Tricyclic Terpene-22S | U | 19.0 | | | | |
| t28R | T8 | C28 Tricyclic Terpene-22R | U | 19.0 | | | | |
| t29S | T9 | C29 Tricyclic Terpene-22S | U | 19.0 | | | | |
| t29R | T10 | C29 Tricyclic Terpene-22R | U | 19.0 | | | | |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | U | 19.0 | | | | |
| t30S | T11a | C30 Tricyclic Terpene-22S | U | 19.0 | | | | |
| t30R | T11b | C30 Tricyclic Terpene-22R | U | 19.0 | | | | |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | U | 19.0 | | | | |
| BNH | T14a | 17a/b,21b/a,28,30-Bisnorhopane | U | 19.0 | | | | |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | U | 19.0 | | | | |
| H29 | T15 | 30-Norhopane | U | 19.0 | | | | |
| C29Ts | T16 | 18a(H)-30-Norneohopane-C29Ts | U | 19.0 | | | | |
| X | X | 17a(H)-Diahopane | U | 19.0 | | | | |
| M29 | T17 | 30-Normoretane | U | 19.0 | | | | |
| OL | T18 | 18a(H)&18b(H)-Oleananes | U | 19.0 | | | | |
| H30 | T19 | Hopane | U | 19.0 | | | | |
| M30 | T20 | Moretane | U | 19.0 | | | | |
| H31S | T21 | 30-Homohopane-22S | U | 19.0 | | | | |
| H31R | T22 | 30-Homohopane-22R | U | 19.0 | | | | |
| H32S | T26 | 30,31-Bishomohopane-22S | U | 19.0 | | | | |
| H32R | T27 | 30,31-Bishomohopane-22R | U | 19.0 | | | | |
| H33R | T30 | 30,31-Trishomohopane-22S | U | 19.0 | | | | |
| H33S | T31 | 30,31-Trishomohopane-22R | U | 19.0 | | | | |
| H34R | T32 | Tetrakishomohopane-22S | U | 19.0 | | | | |
| H34S | T33 | Tetrakishomohopane-22R | U | 19.0 | | | | |
| H35S | T34 | Pentakishomohopane-22S | U | 19.0 | | | | |
| H35R | T35 | Pentakishomohopane-22R | U | 19.0 | | | | |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | U | 19.0 | | | | |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | U | 19.0 | | | | |
| d28S | S8 | 13b,17a-20S-Methylcholestane | U | 19.0 | | | | |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethylcholestane (S12) | U | 19.0 | | | | |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethylcholestane (S17) | U | 19.0 | | | | |
| d29R | S18 | Unknown Sterane (S18) | U | 19.0 | | | | |
| d29S | S19 | 13a,17b-20S-Ethylcholestane | U | 19.0 | | | | |
| aa28S | S20 | 14a,17a-20S-Methylcholestane | U | 19.0 | | | | |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | U | 19.0 | | | | |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethylcholestane | U | 19.0 | | | | |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethylcholestane | U | 19.0 | | | | |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | U | 19.0 | | | | |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | U | 19.0 | | | | |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | U | 19.0 | | | | |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | U | 19.0 | | | | |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethylcholestane | U | 19.0 | | | | |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethylcholestane | U | 19.0 | | | | |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | U | 19.0 | | | | |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | U | 19.0 | | | | |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | U | 19.0 | | | | |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | U | 19.0 | | | | |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | U | 19.0 | | | | |

| | |
|-------------------------|-----|
| Surrogates (% Recovery) | |
| Naphthalene-d8 | 84 |
| Phenanthrene-d10 | 94 |
| Benzo[a]pyrene-d12 | 78 |
| 5B(H)Cholane | N/A |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------|
| Client ID | Laboratory Control |
| Lab ID | Sample Duplicate |
| Matrix | SW032312LCS003 |
| Reference Method | Water |
| Batch ID | Modified 8270C |
| Date Collected | SW032312806 |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/29/2012 |
| Sample Size (wet) | 03/28/2012 |
| % Solid | 1050 |
| File ID | 100.00 |
| Units | a810174.D |
| Final Volume | ng/L |
| Dilution | 2 |
| Reporting Limit | 1 |
| | 19.0 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit | |
|-------|--------|---|--------|------|-------|-------------|-------------|-------------|-----|-----------|----|
| 2 | D0 | cis/trans-Decalin | U | 19.0 | | | | | | | |
| 2 | D1 | C1-Decalins | U | 19.0 | | | | | | | |
| 2 | D2 | C2-Decalins | U | 19.0 | | | | | | | |
| 2 | D3 | C3-Decalins | U | 19.0 | | | | | | | |
| 2 | D4 | C4-Decalins | U | 19.0 | | | | | | | |
| 2 | BT0 | Benzo(ghi)perylene | U | 19.0 | | | | | | | |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 19.0 | | | | | | | |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 19.0 | | | | | | | |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 19.0 | | | | | | | |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 19.0 | | | | | | | |
| 2 | N0 | Naphthalene | 801 | S | 19.0 | 84 | 952 | 50 | 130 | 3 | 30 |
| 2 | N1 | C1-Naphthalenes | U | 19.0 | | | | | | | |
| 2 | N2 | C2-Naphthalenes | U | 19.0 | | | | | | | |
| 2 | N3 | C3-Naphthalenes | U | 19.0 | | | | | | | |
| 2 | N4 | C4-Naphthalenes | U | 19.0 | | | | | | | |
| 2 | B | Biphenyl | U | 19.0 | | | | | | | |
| 3 | DF | Dibenzofuran | U | 19.0 | | | | | | | |
| 3 | AY | Acenaphthylene | 910 | S | 19.0 | 96 | 952 | 50 | 130 | 4 | 30 |
| 3 | AE | Acenaphthene | 939 | S | 19.0 | 99 | 952 | 50 | 130 | 4 | 30 |
| 3 | F0 | Fluorene | 920 | S | 19.0 | 97 | 952 | 50 | 130 | 5 | 30 |
| 3 | F1 | C1-Fluorenes | U | 19.0 | | | | | | | |
| 3 | F2 | C2-Fluorenes | U | 19.0 | | | | | | | |
| 3 | F3 | C3-Fluorenes | U | 19.0 | | | | | | | |
| 3 | A0 | Anthracene | 967 | S | 19.0 | 101 | 952 | 50 | 130 | 10 | 30 |
| 3 | P0 | Phenanthrene | 925 | S | 19.0 | 97 | 952 | 50 | 130 | 6 | 30 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 19.0 | | | | | | | |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 19.0 | | | | | | | |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 19.0 | | | | | | | |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 19.0 | | | | | | | |
| 3 | RET | Retene | U | 19.0 | | | | | | | |
| 3 | DBT0 | Dibenzothiophene | U | 19.0 | | | | | | | |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 19.0 | | | | | | | |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 19.0 | | | | | | | |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 19.0 | | | | | | | |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 19.0 | | | | | | | |
| 4 | BF | Benzo(b)fluorene | U | 19.0 | | | | | | | |
| 4 | FL0 | Fluoranthene | 993 | S | 19.0 | 104 | 952 | 50 | 130 | 6 | 30 |
| 4 | PY0 | Pyrene | 1050 | S | 19.0 | 111 | 952 | 50 | 130 | 7 | 30 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 19.0 | | | | | | | |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 19.0 | | | | | | | |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 19.0 | | | | | | | |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 19.0 | | | | | | | |
| 4 | NBT0 | Naphthobenzothiophenes | U | 19.0 | | | | | | | |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 19.0 | | | | | | | |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 19.0 | | | | | | | |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 19.0 | | | | | | | |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 19.0 | | | | | | | |
| 4 | BA0 | Benzo[a]anthracene | 920 | S | 19.0 | 97 | 952 | 50 | 130 | 8 | 30 |
| 4 | C0 | Chrysene/Triphenylene | 1020 | S | 19.0 | 107 | 952 | 50 | 130 | 10 | 30 |
| 4 | BC1 | C1-Chrysenes | U | 19.0 | | | | | | | |
| 4 | BC2 | C2-Chrysenes | U | 19.0 | | | | | | | |
| 4 | BC3 | C3-Chrysenes | U | 19.0 | | | | | | | |
| 4 | BC4 | C4-Chrysenes | U | 19.0 | | | | | | | |
| 5 | BBF | Benzo[b]fluoranthene | 853 | S | 19.0 | 90 | 952 | 50 | 130 | 13 | 30 |
| 5 | BKJF | Benzo[k]fluoranthene/Benzo[k]fluoranthene | 1060 | S | 19.0 | 111 | 952 | 50 | 130 | 7 | 30 |
| 5 | BAF | Benzo[a]fluoranthene | U | 19.0 | | | | | | | |
| 5 | BEP | Benzo[e]pyrene | U | 19.0 | | | | | | | |
| 5 | BAP | Benzo[a]pyrene | 965 | S | 19.0 | 101 | 952 | 50 | 130 | 10 | 30 |
| 5 | PER | Perylene | U | 19.0 | | | | | | | |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 812 | S | 19.0 | 85 | 952 | 50 | 130 | 6 | 30 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 830 | S | 19.0 | 87 | 952 | 50 | 130 | 8 | 30 |
| 6 | GHI | Benzo[ghi]perylene | 844 | S | 19.0 | 89 | 952 | 50 | 130 | 8 | 30 |
| 6 | CAR | Carbazole | U | 19.0 | | | | | | | |
| 3 | 4MDT | 4-Methylidibenzothiophene | U | 19.0 | | | | | | | |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | U | 19.0 | | | | | | | |
| 3 | 1MDT | 1-Methyldibenzothiophene | U | 19.0 | | | | | | | |
| 3 | 3MP | 3-Methylphenanthrene | U | 19.0 | | | | | | | |
| 3 | 2MP | 2/4-Methylphenanthrene | U | 19.0 | | | | | | | |
| 3 | 2MA | 2-Methylanthracene | U | 19.0 | | | | | | | |
| 3 | 9MP | 9-Methylphenanthrene | U | 19.0 | | | | | | | |
| 3 | 1MP | 1-Methylphenanthrene | U | 19.0 | | | | | | | |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------|
| Client ID | Laboratory Control |
| Lab ID | Sample Duplicate |
| Matrix | SW032312LCS003 |
| Reference Method | Water |
| Batch ID | Modified 8270C |
| Date Collected | SW032312806 |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/29/2012 |
| Sample Size (wet) | 03/28/2012 |
| % Solid | 1050 |
| File ID | 100.00 |
| Units | a810174.D |
| Final Volume | ng/L |
| Dilution | 2 |
| Reporting Limit | 1 |
| | 19.0 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------------|-------------|--|--------|------|-------|-------------|-------------|-------------|-----|-----------|
| t23 | T4 | C23 Tricyclic Terpene | U | 19.0 | | | | | | |
| t24 | T5 | C24 Tricyclic Terpene | U | 19.0 | | | | | | |
| t25 | T6 | C25 Tricyclic Terpene | U | 19.0 | | | | | | |
| te24 | T6a | C24 Tetracyclic Terpene | U | 19.0 | | | | | | |
| t26S | T6b | C26 Tricyclic Terpene-22S | U | 19.0 | | | | | | |
| t26R | T6c | C26 Tricyclic Terpene-22R | U | 19.0 | | | | | | |
| t28S | T7 | C28 Tricyclic Terpene-22S | U | 19.0 | | | | | | |
| t28R | T8 | C28 Tricyclic Terpene-22R | U | 19.0 | | | | | | |
| t29S | T9 | C29 Tricyclic Terpene-22S | U | 19.0 | | | | | | |
| t29R | T10 | C29 Tricyclic Terpene-22R | U | 19.0 | | | | | | |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | U | 19.0 | | | | | | |
| t30S | T11a | C30 Tricyclic Terpene-22S | U | 19.0 | | | | | | |
| t30R | T11b | C30 Tricyclic Terpene-22R | U | 19.0 | | | | | | |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | U | 19.0 | | | | | | |
| BNH | T14a | 17a/b,21b/a 28,30-Bisnorhopane | U | 19.0 | | | | | | |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | U | 19.0 | | | | | | |
| H29 | T15 | 30-Norhopane | U | 19.0 | | | | | | |
| C29Ts | T16 | 18a(H)-30-Norhopane-C29Ts | U | 19.0 | | | | | | |
| X | X | 17a(H)-Diahopane | U | 19.0 | | | | | | |
| M29 | T17 | 30-Normoretane | U | 19.0 | | | | | | |
| OL | T18 | 18a(H)&18b(H)-Oleananes | U | 19.0 | | | | | | |
| H30 | T19 | Hopane | U | 19.0 | | | | | | |
| M30 | T20 | Moretane | U | 19.0 | | | | | | |
| H31S | T21 | 30-Homohopane-22S | U | 19.0 | | | | | | |
| H31R | T22 | 30-Homohopane-22R | U | 19.0 | | | | | | |
| H32S | T26 | 30,31-Bishomohopane-22S | U | 19.0 | | | | | | |
| H32R | T27 | 30,31-Bishomohopane-22R | U | 19.0 | | | | | | |
| H33R | T30 | 30,31-Trishomohopane-22S | U | 19.0 | | | | | | |
| H33S | T31 | 30,31-Trishomohopane-22R | U | 19.0 | | | | | | |
| H34R | T32 | Tetrakishomohopane-22S | U | 19.0 | | | | | | |
| H34S | T33 | Tetrakishomohopane-22R | U | 19.0 | | | | | | |
| H35S | T34 | Pentakishomohopane-22S | U | 19.0 | | | | | | |
| H35R | T35 | Pentakishomohopane-22R | U | 19.0 | | | | | | |
| d27S | S4 | 13b(H), 17a(H)-20S-Diacholestane | U | 19.0 | | | | | | |
| d27R | S5 | 13b(H), 17a(H)-20R-Diacholestane | U | 19.0 | | | | | | |
| d28S | S8 | 13b, 17a-20S-Methylcholestane | U | 19.0 | | | | | | |
| aa27S | S12 | 14a(H), 17a(H)-20S-Cholestane/13b(H), 17a(H)-20S-Ethylcholestane (S12) | U | 19.0 | | | | | | |
| aa27R | S17 | 14a(H), 17a(H)-20R-Cholestane/13b(H), 17a(H)-20R-Ethylcholestane (S17) | U | 19.0 | | | | | | |
| d29R | S18 | Unknown Sterane (S18) | U | 19.0 | | | | | | |
| d29S | S19 | 13a, 17b-20S-Ethylcholestane | U | 19.0 | | | | | | |
| aa28S | S20 | 14a, 17a-20S-Methylcholestane | U | 19.0 | | | | | | |
| aa28R | S24 | 14a, 17a-20R-Methylcholestane | U | 19.0 | | | | | | |
| aa29S | S25 | 14a(H), 17a(H)-20S-Ethylcholestane | U | 19.0 | | | | | | |
| aa29R | S28 | 14a(H), 17a(H)-20R-Ethylcholestane | U | 19.0 | | | | | | |
| bb27R | S14 | 14b(H), 17b(H)-20R-Cholestane | U | 19.0 | | | | | | |
| bb27S | S15 | 14b(H), 17b(H)-20S-Cholestane | U | 19.0 | | | | | | |
| bb28R | S22 | 14b, 17b-20R-Methylcholestane | U | 19.0 | | | | | | |
| bb28S | S23 | 14b, 17b-20S-Methylcholestane | U | 19.0 | | | | | | |
| bb29R | S26 | 14b(H), 17b(H)-20R-Ethylcholestane | U | 19.0 | | | | | | |
| bb29S | S27 | 14b(H), 17b(H)-20S-Ethylcholestane | U | 19.0 | | | | | | |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | U | 19.0 | | | | | | |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | U | 19.0 | | | | | | |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | U | 19.0 | | | | | | |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | U | 19.0 | | | | | | |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | U | 19.0 | | | | | | |

| | |
|-------------------------|-----|
| Surrogates (% Recovery) | |
| Naphthalene-d8 | 85 |
| Phenanthrene-d10 | 97 |
| Benzo[a]pyrene-d12 | 84 |
| 5B(H)Cholane | N/A |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------|
| Client ID | Laboratory Control |
| Lab ID | Sample |
| Matrix | SS032312LCS02 |
| Reference Method | Solid |
| Batch ID | Modified 8270C |
| Date Collected | SS032312B05 |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/29/2012 |
| Sample Size (wet) | 03/26/2012 |
| % Solid | 0.04 |
| File ID | 100.00 |
| Units | a810153.D |
| Final Volume | mg/Kg |
| Dilution | 2 |
| Reporting Limit | 1 |
| | 0.500 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | |
|-------|--------|---|--------|-------|-------|-------------|-------------|-------------|-----|
| 2 | D0 | cis/trans-Decalin | U | 0.500 | | | | | |
| 2 | D1 | C1-Decalins | U | 0.500 | | | | | |
| 2 | D2 | C2-Decalins | U | 0.500 | | | | | |
| 2 | D3 | C3-Decalins | U | 0.500 | | | | | |
| 2 | D4 | C4-Decalins | U | 0.500 | | | | | |
| 2 | BT0 | Benzo[thiophene] | U | 0.500 | | | | | |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 0.500 | | | | | |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 0.500 | | | | | |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 0.500 | | | | | |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 0.500 | | | | | |
| 2 | N0 | Naphthalene | 23.0 | S | 0.500 | 92 | 25.0 | 50 | 130 |
| 2 | N1 | C1-Naphthalenes | U | 0.500 | | | | | |
| 2 | N2 | C2-Naphthalenes | U | 0.500 | | | | | |
| 2 | N3 | C3-Naphthalenes | U | 0.500 | | | | | |
| 2 | N4 | C4-Naphthalenes | U | 0.500 | | | | | |
| 2 | B | Biphenyl | U | 0.500 | | | | | |
| 3 | DF | Dibenzofuran | U | 0.500 | | | | | |
| 3 | AY | Acenaphthylene | 25.6 | S | 0.500 | 103 | 25.0 | 50 | 130 |
| 3 | AE | Acenaphthene | 26.3 | S | 0.500 | 105 | 25.0 | 50 | 130 |
| 3 | F0 | Fluorene | 25.3 | S | 0.500 | 101 | 25.0 | 50 | 130 |
| 3 | F1 | C1-Fluorenes | U | 0.500 | | | | | |
| 3 | F2 | C2-Fluorenes | U | 0.500 | | | | | |
| 3 | F3 | C3-Fluorenes | U | 0.500 | | | | | |
| 3 | A0 | Anthracene | 26.8 | S | 0.500 | 107 | 25.0 | 50 | 130 |
| 3 | P0 | Phenanthrene | 24.9 | S | 0.500 | 100 | 25.0 | 50 | 130 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 0.500 | | | | | |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 0.500 | | | | | |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 0.500 | | | | | |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 0.500 | | | | | |
| 3 | RET | Retene | U | 0.500 | | | | | |
| 3 | DBT0 | Dibenzothiophene | U | 0.500 | | | | | |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 0.500 | | | | | |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 0.500 | | | | | |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 0.500 | | | | | |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 0.500 | | | | | |
| 4 | BF | Benzo(b)fluorene | U | 0.500 | | | | | |
| 4 | FL0 | Fluoranthene | 26.6 | S | 0.500 | 106 | 25.0 | 50 | 130 |
| 4 | PY0 | Pyrene | 28.2 | S | 0.500 | 113 | 25.0 | 50 | 130 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 0.500 | | | | | |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 0.500 | | | | | |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 0.500 | | | | | |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 0.500 | | | | | |
| 4 | NBT0 | Naphthobenzothiophenes | U | 0.500 | | | | | |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 0.500 | | | | | |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 0.500 | | | | | |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 0.500 | | | | | |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 0.500 | | | | | |
| 4 | BA0 | Benzo[a]anthracene | 24.0 | S | 0.500 | 96 | 25.0 | 50 | 130 |
| 4 | C0 | Chrysene/Triphenylene | 26.4 | S | 0.500 | 106 | 25.0 | 50 | 130 |
| 4 | BC1 | C1-Chrysenes | U | 0.500 | | | | | |
| 4 | BC2 | C2-Chrysenes | U | 0.500 | | | | | |
| 4 | BC3 | C3-Chrysenes | U | 0.500 | | | | | |
| 4 | BC4 | C4-Chrysenes | U | 0.500 | | | | | |
| 5 | BBF | Benzo[b]fluoranthene | 21.3 | S | 0.500 | 85 | 25.0 | 50 | 130 |
| 5 | BKJF | Benzo[k]fluoranthene/Benzo[k]fluoranthene | 27.3 | S | 0.500 | 109 | 25.0 | 50 | 130 |
| 5 | BAF | Benzo[a]fluoranthene | U | 0.500 | | | | | |
| 5 | BEP | Benzo[e]pyrene | U | 0.500 | | | | | |
| 5 | BAP | Benzo[a]pyrene | 25.2 | S | 0.500 | 101 | 25.0 | 50 | 130 |
| 5 | PER | Perylene | U | 0.500 | | | | | |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 20.8 | S | 0.500 | 83 | 25.0 | 50 | 130 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 21.6 | S | 0.500 | 86 | 25.0 | 50 | 130 |
| 6 | GHI | Benzo[ghi]perylene | 22.2 | S | 0.500 | 89 | 25.0 | 50 | 130 |
| 6 | CAR | Carbazole | U | 0.500 | | | | | |
| 3 | 4MDT | 4-Methylidibenzothiophene | U | 0.500 | | | | | |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | U | 0.500 | | | | | |
| 3 | 1MDT | 1-Methyldibenzothiophene | U | 0.500 | | | | | |
| 3 | 3MP | 3-Methylphenanthrene | U | 0.500 | | | | | |
| 3 | 2MP | 2/4-Methylphenanthrene | U | 0.500 | | | | | |
| 3 | 2MA | 2-Methylanthracene | U | 0.500 | | | | | |
| 3 | 9MP | 9-Methylphenanthrene | U | 0.500 | | | | | |
| 3 | 1MP | 1-Methylphenanthrene | U | 0.500 | | | | | |



Project Name: GZA-642 Allens Ave
Project Number:

| | | |
|-------------------|--|--------------------|
| Client ID | | Laboratory Control |
| Lab ID | | Sample |
| Matrix | | SS032312LCS02 |
| Reference Method | | Solid |
| Batch ID | | Modified 8270C |
| Date Collected | | SS032312B05 |
| Date Received | | N/A |
| Date Prepped | | N/A |
| Date Analyzed | | 02/29/2012 |
| Sample Size (wet) | | 03/26/2012 |
| % Solid | | 0.04 |
| File ID | | 100.00 |
| Units | | a810153.D |
| Final Volume | | mg/Kg |
| Dilution | | 2 |
| Reporting Limit | | 1 |
| | | 0.500 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------------|-------------|--|--------|-------|-------|-------------|-------------|-------------|
| t23 | T4 | C23 Tricyclic Terpene | U | 0.500 | | | | |
| t24 | T5 | C24 Tricyclic Terpene | U | 0.500 | | | | |
| t25 | T6 | C25 Tricyclic Terpene | U | 0.500 | | | | |
| te24 | T6a | C24 Tetracyclic Terpene | U | 0.500 | | | | |
| t26S | T6b | C26 Tricyclic Terpene-22S | U | 0.500 | | | | |
| t26R | T6c | C26 Tricyclic Terpene-22R | U | 0.500 | | | | |
| t28S | T7 | C28 Tricyclic Terpene-22S | U | 0.500 | | | | |
| t28R | T8 | C28 Tricyclic Terpene-22R | U | 0.500 | | | | |
| t29S | T9 | C29 Tricyclic Terpene-22S | U | 0.500 | | | | |
| t29R | T10 | C29 Tricyclic Terpene-22R | U | 0.500 | | | | |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | U | 0.500 | | | | |
| t30S | T11a | C30 Tricyclic Terpene-22S | U | 0.500 | | | | |
| t30R | T11b | C30 Tricyclic Terpene-22R | U | 0.500 | | | | |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | U | 0.500 | | | | |
| BNH | T14a | 17a/b,21b/a 28,30-Bisnorhopane | U | 0.500 | | | | |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | U | 0.500 | | | | |
| H29 | T15 | 30-Norhopane | U | 0.500 | | | | |
| C29Ts | T16 | 18a(H)-30-Norhopane-C29Ts | U | 0.500 | | | | |
| X | X | 17a(H)-Diahopane | U | 0.500 | | | | |
| M29 | T17 | 30-Normoretane | U | 0.500 | | | | |
| OL | T18 | 18a(H)&18b(H)-Oleananes | U | 0.500 | | | | |
| H30 | T19 | Hopane | U | 0.500 | | | | |
| M30 | T20 | Moretane | U | 0.500 | | | | |
| H31S | T21 | 30-Homohopane-22S | U | 0.500 | | | | |
| H31R | T22 | 30-Homohopane-22R | U | 0.500 | | | | |
| H32S | T26 | 30,31-Bishomohopane-22S | U | 0.500 | | | | |
| H32R | T27 | 30,31-Bishomohopane-22R | U | 0.500 | | | | |
| H33R | T30 | 30,31-Trishomohopane-22S | U | 0.500 | | | | |
| H33S | T31 | 30,31-Trishomohopane-22R | U | 0.500 | | | | |
| H34R | T32 | Tetrakishomohopane-22S | U | 0.500 | | | | |
| H34S | T33 | Tetrakishomohopane-22R | U | 0.500 | | | | |
| H35S | T34 | Pentakishomohopane-22S | U | 0.500 | | | | |
| H35R | T35 | Pentakishomohopane-22R | U | 0.500 | | | | |
| d27S | S4 | 13b(H), 17a(H)-20S-Diacholestane | U | 0.500 | | | | |
| d27R | S5 | 13b(H), 17a(H)-20R-Diacholestane | U | 0.500 | | | | |
| d28S | S8 | 13b,17a-20S-Methylcholestane | U | 0.500 | | | | |
| aa27S | S12 | 14a(H), 17a(H)-20S-Cholestane/13b(H), 17a(H)-20S-Ethylcholestane (S12) | U | 0.500 | | | | |
| aa27R | S17 | 14a(H), 17a(H)-20R-Cholestane/13b(H), 17a(H)-20R-Ethylcholestane (S17) | U | 0.500 | | | | |
| d29R | S18 | Unknown Sterane (S18) | U | 0.500 | | | | |
| d29S | S19 | 13a, 17b-20S-Ethylcholestane | U | 0.500 | | | | |
| aa28S | S20 | 14a, 17a-20S-Methylcholestane | U | 0.500 | | | | |
| aa28R | S24 | 14a, 17a-20R-Methylcholestane | U | 0.500 | | | | |
| aa29S | S25 | 14a(H), 17a(H)-20S-Ethylcholestane | U | 0.500 | | | | |
| aa29R | S28 | 14a(H), 17a(H)-20R-Ethylcholestane | U | 0.500 | | | | |
| bb27R | S14 | 14b(H), 17b(H)-20R-Cholestane | U | 0.500 | | | | |
| bb27S | S15 | 14b(H), 17b(H)-20S-Cholestane | U | 0.500 | | | | |
| bb28R | S22 | 14b, 17b-20R-Methylcholestane | U | 0.500 | | | | |
| bb28S | S23 | 14b, 17b-20S-Methylcholestane | U | 0.500 | | | | |
| bb29R | S26 | 14b(H), 17b(H)-20R-Ethylcholestane | U | 0.500 | | | | |
| bb29S | S27 | 14b(H), 17b(H)-20S-Ethylcholestane | U | 0.500 | | | | |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | U | 0.500 | | | | |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | U | 0.500 | | | | |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | U | 0.500 | | | | |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | U | 0.500 | | | | |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | U | 0.500 | | | | |

| | |
|-------------------------|-----|
| Surrogates (% Recovery) | |
| Naphthalene-d8 | 95 |
| Phenanthrene-d10 | 100 |
| Benzo[a]pyrene-d12 | 84 |
| 5B(H)Cholane | N/A |



Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|--------------------|
| Client ID | Laboratory Control |
| Lab ID | Sample Dup |
| Matrix | SS032312LCS002 |
| Reference Method | Solid |
| Batch ID | Modified 8270C |
| Date Collected | SS032312B05 |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/29/2012 |
| Sample Size (wet) | 03/26/2012 |
| % Solid | 0.04 |
| File ID | 100.00 |
| Units | a810154.D |
| Final Volume | mg/Kg |
| Dilution | 2 |
| Reporting Limit | 1 |
| | 0.500 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit | |
|-------|--------|---|--------|-------|-------|-------------|-------------|-------------|-----|-----------|----|
| 2 | D0 | cis/trans-Decalin | U | 0.500 | | | | | | | |
| 2 | D1 | C1-Decalins | U | 0.500 | | | | | | | |
| 2 | D2 | C2-Decalins | U | 0.500 | | | | | | | |
| 2 | D3 | C3-Decalins | U | 0.500 | | | | | | | |
| 2 | D4 | C4-Decalins | U | 0.500 | | | | | | | |
| 2 | BT0 | Benzo[thiophene] | U | 0.500 | | | | | | | |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 0.500 | | | | | | | |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 0.500 | | | | | | | |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 0.500 | | | | | | | |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 0.500 | | | | | | | |
| 2 | N0 | Naphthalene | 22.2 | S | 0.500 | 89 | 25.0 | 50 | 130 | 4 | 30 |
| 2 | N1 | C1-Naphthalenes | U | 0.500 | | | | | | | |
| 2 | N2 | C2-Naphthalenes | U | 0.500 | | | | | | | |
| 2 | N3 | C3-Naphthalenes | U | 0.500 | | | | | | | |
| 2 | N4 | C4-Naphthalenes | U | 0.500 | | | | | | | |
| 2 | B | Biphenyl | U | 0.500 | | | | | | | |
| 3 | DF | Dibenzofuran | U | 0.500 | | | | | | | |
| 3 | AY | Acenaphthylene | 25.3 | S | 0.500 | 101 | 25.0 | 50 | 130 | 1 | 30 |
| 3 | AE | Acenaphthene | 26.1 | S | 0.500 | 104 | 25.0 | 50 | 130 | 1 | 30 |
| 3 | F0 | Fluorene | 25.1 | S | 0.500 | 101 | 25.0 | 50 | 130 | 0 | 30 |
| 3 | F1 | C1-Fluorenes | U | 0.500 | | | | | | | |
| 3 | F2 | C2-Fluorenes | U | 0.500 | | | | | | | |
| 3 | F3 | C3-Fluorenes | U | 0.500 | | | | | | | |
| 3 | A0 | Anthracene | 26.1 | S | 0.500 | 104 | 25.0 | 50 | 130 | 3 | 30 |
| 3 | P0 | Phenanthrene | 24.6 | S | 0.500 | 98 | 25.0 | 50 | 130 | 1 | 30 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 0.500 | | | | | | | |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 0.500 | | | | | | | |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 0.500 | | | | | | | |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 0.500 | | | | | | | |
| 3 | RET | Retene | U | 0.500 | | | | | | | |
| 3 | DBT0 | Dibenzothiophene | U | 0.500 | | | | | | | |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 0.500 | | | | | | | |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 0.500 | | | | | | | |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 0.500 | | | | | | | |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 0.500 | | | | | | | |
| 4 | BF | Benzo(b)fluorene | U | 0.500 | | | | | | | |
| 4 | FL0 | Fluoranthene | 26.4 | S | 0.500 | 106 | 25.0 | 50 | 130 | 1 | 30 |
| 4 | PY0 | Pyrene | 28.1 | S | 0.500 | 113 | 25.0 | 50 | 130 | 0 | 30 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 0.500 | | | | | | | |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 0.500 | | | | | | | |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 0.500 | | | | | | | |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 0.500 | | | | | | | |
| 4 | NBT0 | Naphthobenzothiophenes | U | 0.500 | | | | | | | |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 0.500 | | | | | | | |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 0.500 | | | | | | | |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 0.500 | | | | | | | |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 0.500 | | | | | | | |
| 4 | BA0 | Benzo[a]anthracene | 23.9 | S | 0.500 | 95 | 25.0 | 50 | 130 | 1 | 30 |
| 4 | C0 | Chrysene/Triphenylene | 26.1 | S | 0.500 | 104 | 25.0 | 50 | 130 | 1 | 30 |
| 4 | BC1 | C1-Chrysenes | U | 0.500 | | | | | | | |
| 4 | BC2 | C2-Chrysenes | U | 0.500 | | | | | | | |
| 4 | BC3 | C3-Chrysenes | U | 0.500 | | | | | | | |
| 4 | BC4 | C4-Chrysenes | U | 0.500 | | | | | | | |
| 5 | BBF | Benzo[b]fluoranthene | 21.1 | S | 0.500 | 84 | 25.0 | 50 | 130 | 1 | 30 |
| 5 | BJKF | Benzo[j]fluoranthene/Benzo[k]fluoranthene | 28.4 | S | 0.500 | 113 | 25.0 | 50 | 130 | 4 | 30 |
| 5 | BAF | Benzo[a]fluoranthene | U | 0.500 | | | | | | | |
| 5 | BEP | Benzo[e]pyrene | U | 0.500 | | | | | | | |
| 5 | BAP | Benzo[a]pyrene | 24.9 | S | 0.500 | 100 | 25.0 | 50 | 130 | 1 | 30 |
| 5 | PER | Perylene | U | 0.500 | | | | | | | |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 20.7 | S | 0.500 | 83 | 25.0 | 50 | 130 | 1 | 30 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 21.3 | S | 0.500 | 85 | 25.0 | 50 | 130 | 1 | 30 |
| 6 | GHI | Benzo[ghi]perylene | 21.8 | S | 0.500 | 87 | 25.0 | 50 | 130 | 2 | 30 |
| 6 | CAR | Carbazole | U | 0.500 | | | | | | | |
| 3 | 4MDT | 4-Methyldibenzothiophene | U | 0.500 | | | | | | | |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | U | 0.500 | | | | | | | |
| 3 | 1MDT | 1-Methyldibenzothiophene | U | 0.500 | | | | | | | |
| 3 | 3MP | 3-Methylphenanthrene | U | 0.500 | | | | | | | |
| 3 | 2MP | 2/4-Methylphenanthrene | U | 0.500 | | | | | | | |
| 3 | 2MA | 2-Methylanthracene | U | 0.500 | | | | | | | |
| 3 | 9MP | 9-Methylphenanthrene | U | 0.500 | | | | | | | |
| 3 | 1MP | 1-Methylphenanthrene | U | 0.500 | | | | | | | |



Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|--------------------|
| Client ID | Laboratory Control |
| Lab ID | Sample Dup |
| Matrix | SS032312LCS002 |
| Reference Method | Solid |
| Batch ID | Modified 8270C |
| Date Collected | SS032312B05 |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/29/2012 |
| Sample Size (wet) | 03/26/2012 |
| % Solid | 0.04 |
| File ID | 100.00 |
| Units | a810154.D |
| Final Volume | mg/Kg |
| Dilution | 2 |
| Reporting Limit | 1 |
| | 0.500 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------------|-------------|--|--------|-------|-------|-------------|-------------|-------------|-----|-----------|
| t23 | T4 | C23 Tricyclic Terpene | U | 0.500 | | | | | | |
| t24 | T5 | C24 Tricyclic Terpene | U | 0.500 | | | | | | |
| t25 | T6 | C25 Tricyclic Terpene | U | 0.500 | | | | | | |
| te24 | T6a | C24 Tetracyclic Terpene | U | 0.500 | | | | | | |
| t26S | T6b | C26 Tricyclic Terpene-22S | U | 0.500 | | | | | | |
| t26R | T6c | C26 Tricyclic Terpene-22R | U | 0.500 | | | | | | |
| t28S | T7 | C28 Tricyclic Terpene-22S | U | 0.500 | | | | | | |
| t28R | T8 | C28 Tricyclic Terpene-22R | U | 0.500 | | | | | | |
| t29S | T9 | C29 Tricyclic Terpene-22S | U | 0.500 | | | | | | |
| t29R | T10 | C29 Tricyclic Terpene-22R | U | 0.500 | | | | | | |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | U | 0.500 | | | | | | |
| t30S | T11a | C30 Tricyclic Terpene-22S | U | 0.500 | | | | | | |
| t30R | T11b | C30 Tricyclic Terpene-22R | U | 0.500 | | | | | | |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | U | 0.500 | | | | | | |
| BNH | T14a | 17a/b,21b/a 28,30-Bisnorhopane | U | 0.500 | | | | | | |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | U | 0.500 | | | | | | |
| H29 | T15 | 30-Norhopane | U | 0.500 | | | | | | |
| C29Ts | T16 | 18a(H)-30-Norhopane-C29Ts | U | 0.500 | | | | | | |
| X | X | 17a(H)-Diahopane | U | 0.500 | | | | | | |
| M29 | T17 | 30-Normoretane | U | 0.500 | | | | | | |
| OL | T18 | 18a(H)&18b(H)-Oleananes | U | 0.500 | | | | | | |
| H30 | T19 | Hopane | U | 0.500 | | | | | | |
| M30 | T20 | Moretane | U | 0.500 | | | | | | |
| H31S | T21 | 30-Homohopane-22S | U | 0.500 | | | | | | |
| H31R | T22 | 30-Homohopane-22R | U | 0.500 | | | | | | |
| H32S | T26 | 30,31-Bishomohopane-22S | U | 0.500 | | | | | | |
| H32R | T27 | 30,31-Bishomohopane-22R | U | 0.500 | | | | | | |
| H33R | T30 | 30,31-Trishomohopane-22S | U | 0.500 | | | | | | |
| H33S | T31 | 30,31-Trishomohopane-22R | U | 0.500 | | | | | | |
| H34R | T32 | Tetrakishomohopane-22S | U | 0.500 | | | | | | |
| H34S | T33 | Tetrakishomohopane-22R | U | 0.500 | | | | | | |
| H35S | T34 | Pentakishomohopane-22S | U | 0.500 | | | | | | |
| H35R | T35 | Pentakishomohopane-22R | U | 0.500 | | | | | | |
| d27S | S4 | 13b(H), 17a(H)-20S-Diacholestane | U | 0.500 | | | | | | |
| d27R | S5 | 13b(H), 17a(H)-20R-Diacholestane | U | 0.500 | | | | | | |
| d28S | S8 | 13b, 17a-20S-Methylcholestane | U | 0.500 | | | | | | |
| aa27S | S12 | 14a(H), 17a(H)-20S-Cholestane/13b(H), 17a(H)-20S-Ethylcholestane (S12) | U | 0.500 | | | | | | |
| aa27R | S17 | 14a(H), 17a(H)-20R-Cholestane/13b(H), 17a(H)-20R-Ethylcholestane (S17) | U | 0.500 | | | | | | |
| d29R | S18 | Unknown Sterane (S18) | U | 0.500 | | | | | | |
| d29S | S19 | 13a, 17b-20S-Ethylcholestane | U | 0.500 | | | | | | |
| aa28S | S20 | 14a, 17a-20S-Methylcholestane | U | 0.500 | | | | | | |
| aa28R | S24 | 14a, 17a-20R-Methylcholestane | U | 0.500 | | | | | | |
| aa29S | S25 | 14a(H), 17a(H)-20S-Ethylcholestane | U | 0.500 | | | | | | |
| aa29R | S28 | 14a(H), 17a(H)-20R-Ethylcholestane | U | 0.500 | | | | | | |
| bb27R | S14 | 14b(H), 17b(H)-20R-Cholestane | U | 0.500 | | | | | | |
| bb27S | S15 | 14b(H), 17b(H)-20S-Cholestane | U | 0.500 | | | | | | |
| bb28R | S22 | 14b, 17b-20R-Methylcholestane | U | 0.500 | | | | | | |
| bb28S | S23 | 14b, 17b-20S-Methylcholestane | U | 0.500 | | | | | | |
| bb29R | S26 | 14b(H), 17b(H)-20R-Ethylcholestane | U | 0.500 | | | | | | |
| bb29S | S27 | 14b(H), 17b(H)-20S-Ethylcholestane | U | 0.500 | | | | | | |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | U | 0.500 | | | | | | |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | U | 0.500 | | | | | | |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | U | 0.500 | | | | | | |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | U | 0.500 | | | | | | |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | U | 0.500 | | | | | | |

| | |
|-------------------------|-----|
| Surrogates (% Recovery) | |
| Naphthalene-d8 | 92 |
| Phenanthrene-d10 | 98 |
| Benzo[a]pyrene-d12 | 83 |
| 5B(H)Cholane | N/A |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------|
| Client ID | Alaska North Slope |
| Lab ID | Crude |
| Matrix | SS030312ANS02 |
| Reference Method | Oil |
| Batch ID | Modified 8270C |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/24/2012 |
| Sample Size (wet) | 0.0521 |
| % Solid | 100.00 |
| File ID | A809751.D |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 1.92 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---|--------|------|-------|-------------|-------------|-------------|
| 2 | D0 | cis/trans-Decalin | 540 | 1.92 | 106 | 508.70 | 65 | 135 |
| 2 | D1 | C1-Decalins | 812 | 1.92 | 107 | 761.10 | 65 | 135 |
| 2 | D2 | C2-Decalins | 720 | 1.92 | 112 | 641.90 | 65 | 135 |
| 2 | D3 | C3-Decalins | 360 | 1.92 | 106 | 338.20 | 65 | 135 |
| 2 | D4 | C4-Decalins | 360 | 1.92 | 119 | 300.90 | 65 | 135 |
| 2 | BT0 | Benzo(b)thiophene | 6.08 | 1.92 | 115 | 5.30 | 65 | 135 |
| 2 | BT1 | C1-Benzo(b)thiophenes | 32.5 | 1.92 | 109 | 29.80 | 65 | 135 |
| 2 | BT2 | C2-Benzo(b)thiophenes | 55.3 | 1.92 | 110 | 50.10 | 65 | 135 |
| 2 | BT3 | C3-Benzo(b)thiophenes | 110 | 1.92 | 106 | 103.30 | 65 | 135 |
| 2 | BT4 | C4-Benzo(b)thiophenes | 103 | 1.92 | 122 | 84.90 | 65 | 135 |
| 2 | N0 | Naphthalene | 590 | 1.92 | 102 | 577.60 | 65 | 135 |
| 2 | N1 | C1-Naphthalenes | 1290 | 1.92 | 104 | 1242.00 | 65 | 135 |
| 2 | N2 | C2-Naphthalenes | 1570 | 1.92 | 107 | 1472.00 | 65 | 135 |
| 2 | N3 | C3-Naphthalenes | 1150 | 1.92 | 109 | 1053.40 | 65 | 135 |
| 2 | N4 | C4-Naphthalenes | 636 | 1.92 | 115 | 552.70 | 65 | 135 |
| 2 | B | Biphenyl | 154 | 1.92 | 101 | 152.50 | 65 | 135 |
| 3 | DF | Dibenzofuran | 55.2 | 1.92 | 103 | 53.50 | 65 | 135 |
| 3 | AY | Acenaphthylene | 6.77 | 1.92 | 95 | 7.10 | 65 | 135 |
| 3 | AE | Acenaphthene | 20.2 | 1.92 | 108 | 18.70 | 65 | 135 |
| 3 | F0 | Fluorene | 80.5 | 1.92 | 101 | 79.40 | 65 | 135 |
| 3 | F1 | C1-Fluorenes | 184 | 1.92 | 105 | 175.10 | 65 | 135 |
| 3 | F2 | C2-Fluorenes | 298 | 1.92 | 116 | 256.50 | 65 | 135 |
| 3 | F3 | C3-Fluorenes | 281 | 1.92 | 118 | 238.70 | 65 | 135 |
| 3 | A0 | Anthracene | U | 1.92 | | | | |
| 3 | P0 | Phenanthrene | 236 | 1.92 | 106 | 222.00 | 65 | 135 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | 495 | 1.92 | 112 | 440.50 | 65 | 135 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | 541 | 1.92 | 116 | 464.90 | 65 | 135 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | 375 | 1.92 | 122 | 307.70 | 65 | 135 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | 154 | 1.92 | 125 | 122.90 | 65 | 135 |
| 3 | RET | Retene | U | 1.92 | | | | |
| 3 | DBT0 | Dibenzothiophene | 149 | 1.92 | 102 | 146.10 | 65 | 135 |
| 3 | DBT1 | C1-Dibenzothiophenes | 311 | 1.92 | 104 | 299.00 | 65 | 135 |
| 3 | DBT2 | C2-Dibenzothiophenes | 428 | 1.92 | 109 | 392.90 | 65 | 135 |
| 3 | DBT3 | C3-Dibenzothiophenes | 370 | 1.92 | 106 | 350.50 | 65 | 135 |
| 3 | DBT4 | C4-Dibenzothiophenes | 203 | 1.92 | 108 | 189.20 | 65 | 135 |
| 4 | BF | Benzo(b)fluorene | 7.20 | 1.92 | | | | |
| 4 | FL0 | Fluoranthene | 4.32 | 1.92 | 105 | 4.10 | 65 | 135 |
| 4 | PY0 | Pyrene | 14.9 | 1.92 | 112 | 13.30 | 65 | 135 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | 71.4 | 1.92 | 108 | 66.10 | 65 | 135 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | 111 | 1.92 | 110 | 100.90 | 65 | 135 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | 135 | 1.92 | 112 | 120.80 | 65 | 135 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | 110 | 1.92 | 105 | 105.60 | 65 | 135 |
| 4 | NBT0 | Naphthobenzothiophenes | 47.0 | 1.92 | 104 | 45.10 | 65 | 135 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | 120 | 1.92 | 97 | 124.10 | 65 | 135 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | 165 | 1.92 | 98 | 168.90 | 65 | 135 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | 131 | 1.92 | 96 | 136.10 | 65 | 135 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | 88.4 | 1.92 | 94 | 93.90 | 65 | 135 |
| 4 | BA0 | Benz[a]anthracene | 2.23 | 1.92 | 112 | 2.00 | 65 | 135 |
| 4 | C0 | Chrysene/Triphenylene | 36.9 | 1.92 | 99 | 37.40 | 65 | 135 |
| 4 | BC1 | C1-Chrysenes | 66.4 | 1.92 | 104 | 63.90 | 65 | 135 |
| 4 | BC2 | C2-Chrysenes | 87.5 | 1.92 | 101 | 86.60 | 65 | 135 |
| 4 | BC3 | C3-Chrysenes | 99.5 | 1.92 | 100 | 99.60 | 65 | 135 |
| 4 | BC4 | C4-Chrysenes | 58.7 | 1.92 | 94 | 62.20 | 65 | 135 |
| 5 | BBF | Benzo[b]fluoranthene | 5.07 | 1.92 | 96 | 5.30 | 65 | 135 |
| 5 | BJKF | Benzo[j]fluoranthene/Benzo[k]fluoranthene | U | 1.92 | | | | |
| 5 | BAF | Benzo[a]fluoranthene | U | 1.92 | | | | |
| 5 | BEP | Benzo[e]pyrene | 9.57 | 1.92 | 100 | 9.60 | 65 | 135 |
| 5 | BAP | Benzo[a]pyrene | 2.18 | 1.92 | 109 | 2.00 | 65 | 135 |
| 5 | PER | Perylene | 2.88 | 1.92 | 107 | 2.70 | 65 | 135 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 0.666 | J | 1.92 | | | |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 0.866 | J | 1.92 | | | |
| 6 | GHI | Benzo[g,h,i]perylene | 2.97 | 1.92 | 96 | 3.10 | 65 | 135 |
| 6 | CAR | Carbazole | 7.84 | 1.92 | 121 | 6.50 | 65 | 135 |
| 3 | 4MDT | 4-Methyldibenzothiophene | 148 | 1.92 | 103 | 143.50 | 65 | 135 |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | 103 | 1.92 | 100 | 103.10 | 65 | 135 |
| 3 | 1MDT | 1-Methyldibenzothiophene | 48.4 | 1.92 | 104 | 46.80 | 65 | 135 |
| 3 | 3MP | 3-Methylphenanthrene | 101 | 1.92 | 110 | 91.80 | 65 | 135 |
| 3 | 2MP | 2/4-Methylphenanthrene | 114 | 1.92 | 115 | 99.60 | 65 | 135 |
| 3 | 2MA | 2-Methylanthracene | 4.02 | 1.92 | 130 | 3.10 | 65 | 135 |
| 3 | 9MP | 9-Methylphenanthrene | 161 | 1.92 | 110 | 145.90 | 65 | 135 |
| 3 | 1MP | 1-Methylphenanthrene | 113 | 1.92 | 116 | 97.60 | 65 | 135 |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------|
| Client ID | Alaska North Slope |
| Lab ID | Crude |
| Matrix | SS030312ANS02 |
| Reference Method | Oil |
| Batch ID | Modified 8270C |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/24/2012 |
| Sample Size (wet) | 0.0521 |
| % Solid | 100.00 |
| File ID | A809751.D |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 1.92 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------------|-------------|---|--------|------|-------|-------------|-------------|-------------|
| t23 | T4 | C23 Tricyclic Terpene | 64.5 | 1.92 | 96 | 67.10 | 65 | 135 |
| t24 | T5 | C24 Tricyclic Terpene | 41.4 | 1.92 | 98 | 42.30 | 65 | 135 |
| t25 | T6 | C25 Tricyclic Terpene | 40.3 | 1.92 | 99 | 40.90 | 65 | 135 |
| te24 | T6a | C24 Tetracyclic Terpene | 13.7 | 1.92 | 96 | 14.30 | 65 | 135 |
| t26S | T6b | C26 Tricyclic Terpene-22S | 15.5 | 1.92 | 91 | 17.00 | 65 | 135 |
| t26R | T6c | C26 Tricyclic Terpene-22R | 14.5 | 1.92 | 97 | 15.00 | 65 | 135 |
| t28S | T7 | C28 Tricyclic Terpene-22S | 15.5 | 1.92 | 95 | 16.30 | 65 | 135 |
| t28R | T8 | C28 Tricyclic Terpene-22R | 17.0 | 1.92 | 96 | 17.70 | 65 | 135 |
| t29S | T9 | C29 Tricyclic Terpene-22S | 21.0 | 1.92 | 101 | 20.70 | 65 | 135 |
| t29R | T10 | C29 Tricyclic Terpene-22R | 21.3 | 1.92 | 101 | 21.10 | 65 | 135 |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | 29.9 | 1.92 | 98 | 30.60 | 65 | 135 |
| t30S | T11a | C30 Tricyclic Terpene-22S | 18.7 | 1.92 | 118 | 15.80 | 65 | 135 |
| t30R | T11b | C30 Tricyclic Terpene-22R | 17.3 | 1.92 | 109 | 15.80 | 65 | 135 |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | 35.8 | 1.92 | 98 | 36.70 | 65 | 135 |
| BNH | T14a | 17a/b,21b/a,28,30-Bisnorhopane | 6.53 | 1.92 | 91 | 7.20 | 65 | 135 |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | 8.25 | 1.92 | 96 | 8.60 | 65 | 135 |
| H29 | T15 | 30-Norhopane | 94.9 | 1.92 | 97 | 97.50 | 65 | 135 |
| C29Ts | T16 | 18a(H)-30-Norhopane-C29Ts | 24.0 | 1.92 | 98 | 24.40 | 65 | 135 |
| X | X | 17a(H)-Diahopane | 14.5 | 1.92 | 101 | 14.30 | 65 | 135 |
| M29 | T17 | 30-Normoretane | 10.4 | 1.92 | 91 | 11.50 | 65 | 135 |
| OL | T18 | 18a(H)&18b(H)-Oleananes | 3.14 | 1.92 | | | | |
| H30 | T19 | Hopane | 161 | 1.92 | 94 | 171.10 | 65 | 135 |
| M30 | T20 | Moretane | 17.4 | 1.92 | 105 | 16.60 | 65 | 135 |
| H31S | T21 | 30-Homohopane-22S | 75.1 | 1.92 | 102 | 73.80 | 65 | 135 |
| H31R | T22 | 30-Homohopane-22R | 63.0 | 1.92 | 99 | 63.40 | 65 | 135 |
| H32S | T26 | 30,31-Bishomohopane-22S | 53.0 | 1.92 | 101 | 52.50 | 65 | 135 |
| H32R | T27 | 30,31-Bishomohopane-22R | 39.0 | 1.92 | 101 | 38.40 | 65 | 135 |
| H33R | T30 | 30,31-Trishomohopane-22S | 39.7 | 1.92 | 97 | 41.10 | 65 | 135 |
| H33S | T31 | 30,31-Trishomohopane-22R | 25.7 | 1.92 | 94 | 27.40 | 65 | 135 |
| H34R | T32 | Tetrakishomohopane-22S | 28.0 | 1.92 | 93 | 30.00 | 65 | 135 |
| H34S | T33 | Tetrakishomohopane-22R | 19.5 | 1.92 | 94 | 20.70 | 65 | 135 |
| H35S | T34 | Pentakishomohopane-22S | 30.2 | 1.92 | 100 | 30.20 | 65 | 135 |
| H35R | T35 | Pentakishomohopane-22R | 23.6 | 1.92 | 102 | 23.20 | 65 | 135 |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | 45.1 | 1.92 | 92 | 49.20 | 65 | 135 |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | 27.9 | 1.92 | 110 | 25.30 | 65 | 135 |
| d28S | S8 | 13b,17a-20S-Methyldiacholestane | 24.0 | 1.92 | 103 | 23.30 | 65 | 135 |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12) | 64.4 | 1.92 | 100 | 64.20 | 65 | 135 |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17) | 76.3 | 1.92 | 101 | 75.50 | 65 | 135 |
| d29R | S18 | Unknown Sterane (S18) | 20.8 | 1.92 | 100 | 20.70 | 65 | 135 |
| d29S | S19 | 13a,17b-20S-Ethyldiacholestane | 3.52 | 1.92 | 84 | 4.20 | 65 | 135 |
| aa28S | S20 | 14a,17a-20S-Methylcholestane | 37.5 | 1.92 | 102 | 36.70 | 65 | 135 |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | 31.0 | 1.92 | 94 | 33.00 | 65 | 135 |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethyldiacholestane | 52.9 | 1.92 | 102 | 51.90 | 65 | 135 |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethyldiacholestane | 40.0 | 1.92 | 101 | 39.70 | 65 | 135 |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | 39.0 | 1.92 | 97 | 40.10 | 65 | 135 |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | 40.6 | 1.92 | 100 | 40.70 | 65 | 135 |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | 42.0 | 1.92 | 94 | 44.80 | 65 | 135 |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | 52.9 | 1.92 | 98 | 54.00 | 65 | 135 |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethyldiacholestane | 58.4 | 1.92 | 99 | 59.20 | 65 | 135 |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethyldiacholestane | 36.7 | 1.92 | 90 | 40.60 | 65 | 135 |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | 265 | 1.92 | 87 | 304.20 | 65 | 135 |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | 172 | 1.92 | 90 | 191.80 | 65 | 135 |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | 166 | 1.92 | 89 | 186.40 | 65 | 135 |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | 138 | 1.92 | 87 | 158.30 | 65 | 135 |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | 14.0 | 1.92 | | | | |



Project Name: GZA-642 Allens Ave
 Project Number:

| | Parking Lot CB | Parking Lot CB | Parking Lot CB |
|-------------------|----------------|----------------|----------------|
| Client ID | 1203044-01 | 1203044-02 | 1203044-03 |
| Lab ID | Solid | Solid | Water |
| Matrix | Modified 8270C | Modified 8270C | Modified 8270C |
| Reference Method | SS032312B05 | SS032312B05 | SS032312B05 |
| Batch ID | 02/24/2012 | 02/24/2012 | 02/24/2012 |
| Date Collected | 02/28/2012 | 02/28/2012 | 02/28/2012 |
| Date Received | 02/29/2012 | 02/29/2012 | 02/29/2012 |
| Date Prepped | 03/27/2012 | 03/27/2012 | 03/28/2012 |
| Date Analyzed | 0.01248 | 0.10464 | 1050 |
| Sample Size (wet) | 100.00 | 100.00 | 100.00 |
| % Solid | a810156.D | a810157.D | a810176.D |
| File ID | mg/Kg | mg/Kg | ng/L |
| Units | 4 | 16 | 8 |
| Final Volume | 1 | 1 | 1 |
| Dilution | 3.20 | 1.53 | 76.2 |
| Reporting Limit | | | |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | Result | SSRL |
|-------|--------|---|--------|--------|--------|------|--------|------|
| 2 | D0 | cis/trans-Decalin | 27.3 | 3.20 | 429 | 1.53 | 2570 | 76.2 |
| 2 | D1 | C1-Decalins | 89.1 | 3.20 | 1020 | 1.53 | 3250 | 76.2 |
| 2 | D2 | C2-Decalins | 231 | 3.20 | 1200 | 1.53 | 3280 | 76.2 |
| 2 | D3 | C3-Decalins | 326 | 3.20 | 860 | 1.53 | 2890 | 76.2 |
| 2 | D4 | C4-Decalins | 713 | 3.20 | 981 | 1.53 | 5170 | 76.2 |
| 2 | BT0 | Benzothiophene | 1.34 | J 3.20 | 4.81 | 1.53 | 244 | 76.2 |
| 2 | BT1 | C1-Benzo(b)thiophenes | 51.7 | 3.20 | 126 | 1.53 | 2580 | 76.2 |
| 2 | BT2 | C2-Benzo(b)thiophenes | 178 | 3.20 | 601 | 1.53 | 6030 | 76.2 |
| 2 | BT3 | C3-Benzo(b)thiophenes | 752 | 3.20 | 1720 | 1.53 | 10300 | 76.2 |
| 2 | BT4 | C4-Benzo(b)thiophenes | 1060 | 3.20 | 1710 | 1.53 | 9180 | 76.2 |
| 2 | N0 | Naphthalene | 21.0 | 3.20 | 14.3 | 1.53 | 850 | 76.2 |
| 2 | N1 | C1-Naphthalenes | 50.5 | 3.20 | 94.5 | 1.53 | 2280 | 76.2 |
| 2 | N2 | C2-Naphthalenes | 376 | 3.20 | 870 | 1.53 | 8570 | 76.2 |
| 2 | N3 | C3-Naphthalenes | 973 | 3.20 | 1690 | 1.53 | 11600 | 76.2 |
| 2 | N4 | C4-Naphthalenes | 1080 | 3.20 | 1310 | 1.53 | 11100 | 76.2 |
| 2 | B | Biphenyl | 1.71 | J 3.20 | 1.67 | 1.53 | 78.4 | 76.2 |
| 3 | DF | Dibenzofuran | 50.2 | 3.20 | 19.2 | 1.53 | 1150 | 76.2 |
| 3 | AY | Acenaphthylene | 50.1 | 3.20 | 15.5 | 1.53 | 2530 | 76.2 |
| 3 | AE | Acenaphthene | 42.6 | 3.20 | 20.6 | 1.53 | 1890 | 76.2 |
| 3 | F0 | Fluorene | 76.2 | 3.20 | 57.6 | 1.53 | 1850 | 76.2 |
| 3 | F1 | C1-Fluorenes | 148 | 3.20 | 179 | 1.53 | 2180 | 76.2 |
| 3 | F2 | C2-Fluorenes | 325 | 3.20 | 350 | 1.53 | 5950 | 76.2 |
| 3 | F3 | C3-Fluorenes | 338 | 3.20 | 380 | 1.53 | 5620 | 76.2 |
| 3 | A0 | Anthracene | 92.0 | 3.20 | 18.3 | 1.53 | 2710 | 76.2 |
| 3 | P0 | Phenanthrene | 134 | 3.20 | 102 | 1.53 | 3800 | 76.2 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | 292 | 3.20 | 324 | 1.53 | 5240 | 76.2 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | 431 | 3.20 | 455 | 1.53 | 8120 | 76.2 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | 297 | 3.20 | 301 | 1.53 | 4850 | 76.2 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | 149 | 3.20 | 153 | 1.53 | 2410 | 76.2 |
| 3 | RET | Retene | 90.2 | 3.20 | U 1.53 | 1.53 | 1290 | 76.2 |
| 3 | DBT0 | Dibenzothiophene | 56.8 | 3.20 | 141 | 1.53 | 1160 | 76.2 |
| 3 | DBT1 | C1-Dibenzothiophenes | 397 | 3.20 | 573 | 1.53 | 5030 | 76.2 |
| 3 | DBT2 | C2-Dibenzothiophenes | 733 | 3.20 | 1040 | 1.53 | 7700 | 76.2 |
| 3 | DBT3 | C3-Dibenzothiophenes | 781 | 3.20 | 976 | 1.53 | 6600 | 76.2 |
| 3 | DBT4 | C4-Dibenzothiophenes | 478 | 3.20 | 587 | 1.53 | 3990 | 76.2 |
| 4 | BF | Benzo(b)fluorene | 69.1 | 3.20 | 11.8 | 1.53 | 1890 | 76.2 |
| 4 | FL0 | Fluoranthene | 414 | 3.20 | 37.6 | 1.53 | 14200 | 76.2 |
| 4 | PY0 | Pyrene | 424 | 3.20 | 116 | 1.53 | 13200 | 76.2 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | 350 | 3.20 | 170 | 1.53 | 8870 | 76.2 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | 220 | 3.20 | 155 | 1.53 | 5560 | 76.2 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | 151 | 3.20 | 133 | 1.53 | 3520 | 76.2 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | 112 | 3.20 | 99.1 | 1.53 | 2610 | 76.2 |
| 4 | NBT0 | Naphthobenzothiophenes | 69.3 | 3.20 | 29.6 | 1.53 | 2400 | 76.2 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | 106 | 3.20 | 85.8 | 1.53 | 2600 | 76.2 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | 154 | 3.20 | 139 | 1.53 | 3390 | 76.2 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | 143 | 3.20 | 129 | 1.53 | 3150 | 76.2 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | 114 | 3.20 | 100 | 1.53 | 2700 | 76.2 |
| 4 | BA0 | Benzo[a]anthracene | 158 | 3.20 | 22.2 | 1.53 | 6720 | 76.2 |
| 4 | C0 | Chrysene/Triphenylene | 168 | 3.20 | 29.6 | 1.53 | 7500 | 76.2 |
| 4 | BC1 | C1-Chrysenes | 110 | 3.20 | 54.4 | 1.53 | 4320 | 76.2 |
| 4 | BC2 | C2-Chrysenes | 101 | 3.20 | 75.6 | 1.53 | 3070 | 76.2 |
| 4 | BC3 | C3-Chrysenes | 93.0 | 3.20 | 74.2 | 1.53 | 3020 | 76.2 |
| 4 | BC4 | C4-Chrysenes | 58.4 | 3.20 | 50.8 | 1.53 | 2050 | 76.2 |
| 5 | BBF | Benzo[b]fluoranthene | 127 | 3.20 | 13.9 | 1.53 | 6960 | 76.2 |
| 5 | BJKF | Benzo[j]fluoranthene/Benzo[k]fluoranthene | 126 | 3.20 | 11.8 | 1.53 | 6300 | 76.2 |
| 5 | BAF | Benzo[a]fluoranthene | 33.6 | 3.20 | 3.26 | 1.53 | 1700 | 76.2 |
| 5 | BEP | Benzo[e]pyrene | 111 | 3.20 | 22.0 | 1.53 | 5690 | 76.2 |
| 5 | BAP | Benzo[a]pyrene | 139 | 3.20 | 17.8 | 1.53 | 7100 | 76.2 |
| 5 | PER | Perylene | 27.2 | 3.20 | 5.46 | 1.53 | 1960 | 76.2 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 80.5 | 3.20 | 9.61 | 1.53 | 5060 | 76.2 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 21.9 | 3.20 | 3.06 | 1.53 | 1390 | 76.2 |
| 6 | GHI | Benzo[ghi]perylene | 81.6 | 3.20 | 14.1 | 1.53 | 5060 | 76.2 |
| 6 | CAR | Carbazole | 17.8 | 3.20 | 8.23 | 1.53 | 1930 | 76.2 |
| 3 | 4MDT | 4-Methylidibenzothiophene | 160 | 3.20 | 230 | 1.53 | 1900 | 76.2 |
| 3 | 2MDT | 2/3-Methylidibenzothiophene | 126 | 3.20 | 179 | 1.53 | 1510 | 76.2 |
| 3 | 1MDT | 1-Methylidibenzothiophene | 85.0 | 3.20 | 120 | 1.53 | 1100 | 76.2 |
| 3 | 3MP | 3-Methylphenanthrene | 46.7 | 3.20 | 61.7 | 1.53 | 762 | 76.2 |
| 3 | 2MP | 2/4-Methylphenanthrene | 63.1 | 3.20 | 72.7 | 1.53 | 1030 | 76.2 |
| 3 | 2MA | 2-Methylanthracene | 23.0 | 3.20 | 16.4 | 1.53 | 644 | 76.2 |
| 3 | 9MP | 9-Methylphenanthrene | 90.4 | 3.20 | 100 | 1.53 | 1630 | 76.2 |
| 3 | 1MP | 1-Methylphenanthrene | 58.9 | 3.20 | 67.6 | 1.53 | 1050 | 76.2 |



Project Name: GZA-642 Allens Ave
 Project Number:

| | Parking Lot CB | Parking Lot CB | Parking Lot CB |
|-------------------|----------------|----------------|----------------|
| Client ID | 1203044-01 | 1203044-02 | 1203044-03 |
| Lab ID | 1203044-01 | 1203044-02 | 1203044-03 |
| Matrix | Solid | Solid | Water |
| Reference Method | Modified 8270C | Modified 8270C | Modified 8270C |
| Batch ID | SS032312B05 | SS032312B05 | SS032312B06 |
| Date Collected | 02/24/2012 | 02/24/2012 | 02/24/2012 |
| Date Received | 02/28/2012 | 02/28/2012 | 02/28/2012 |
| Date Prepped | 02/29/2012 | 02/29/2012 | 02/29/2012 |
| Date Analyzed | 03/27/2012 | 03/27/2012 | 03/28/2012 |
| Sample Size (wet) | 0.01248 | 0.10464 | 1050 |
| % Solid | 100.00 | 100.00 | 100.00 |
| File ID | a810156.D | a810157.D | a810176.D |
| Units | mg/Kg | mg/Kg | ng/L |
| Final Volume | 4 | 16 | 8 |
| Dilution | 1 | 1 | 1 |
| Reporting Limit | 3.20 | 1.53 | 76.2 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | Result | SSRL |
|-------------|-------------|---|--------|------|--------|------|--------|------|
| t23 | T4 | C23 Tricyclic Terpene | 56.6 | 3.20 | 67.6 | 1.53 | 750 | 76.2 |
| t24 | T5 | C24 Tricyclic Terpene | 18.6 | 3.20 | 21.7 | 1.53 | 292 | 76.2 |
| t25 | T6 | C25 Tricyclic Terpene | 17.2 | 3.20 | 19.6 | 1.53 | 386 | 76.2 |
| te24 | T6a | C24 Tetracyclic Terpene | 18.2 | 3.20 | 17.8 | 1.53 | 313 | 76.2 |
| t26S | T6b | C26 Tricyclic Terpene-22S | 8.16 | 3.20 | 6.58 | 1.53 | 196 | 76.2 |
| t26R | T6c | C26 Tricyclic Terpene-22R | 6.66 | 3.20 | 6.96 | 1.53 | 148 | 76.2 |
| t28S | T7 | C28 Tricyclic Terpene-22S | 6.28 | 3.20 | 5.46 | 1.53 | 184 | 76.2 |
| t28R | T8 | C28 Tricyclic Terpene-22R | 7.96 | 3.20 | 5.85 | 1.53 | 209 | 76.2 |
| t29S | T9 | C29 Tricyclic Terpene-22S | 8.34 | 3.20 | 8.66 | 1.53 | 253 | 76.2 |
| t29R | T10 | C29 Tricyclic Terpene-22R | 7.88 | 3.20 | 6.50 | 1.53 | 200 | 76.2 |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | 33.8 | 3.20 | 27.4 | 1.53 | 842 | 76.2 |
| t30S | T11a | C30 Tricyclic Terpene-22S | 10.1 | 3.20 | 6.55 | 1.53 | 411 | 76.2 |
| t30R | T11b | C30 Tricyclic Terpene-22R | 9.65 | 3.20 | 7.65 | 1.53 | 291 | 76.2 |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | 57.7 | 3.20 | 49.7 | 1.53 | 1360 | 76.2 |
| BNH | T14a | 17a/b,21b/a 28,30-Bisnorhopane | 18.8 | 3.20 | 17.6 | 1.53 | 490 | 76.2 |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | 5.00 | 3.20 | 3.73 | 1.53 | 160 | 76.2 |
| H29 | T15 | 30-Norhopane | 195 | 3.20 | 164 | 1.53 | 4430 | 76.2 |
| C29Ts | T16 | 18a(H)-30-Norneohopane-C29Ts | 39.0 | 3.20 | 28.8 | 1.53 | 723 | 76.2 |
| X | X | 17a(H)-Diahopane | 7.87 | 3.20 | 5.53 | 1.53 | 130 | 76.2 |
| M29 | T17 | 30-Normoretane | 27.9 | 3.20 | 19.4 | 1.53 | 470 | 76.2 |
| OL | T18 | 18a(H)&18b(H)-Oleananes | 15.4 | 3.20 | 10.9 | 1.53 | 233 | 76.2 |
| H30 | T19 | Hopane | 236 | 3.20 | 189 | 1.53 | 5400 | 76.2 |
| M30 | T20 | Moretane | 32.2 | 3.20 | 21.9 | 1.53 | 568 | 76.2 |
| H31S | T21 | 30-Homohopane-22S | 100 | 3.20 | 76.0 | 1.53 | 2720 | 76.2 |
| H31R | T22 | 30-Homohopane-22R | 77.4 | 3.20 | 62.3 | 1.53 | 2240 | 76.2 |
| H32S | T26 | 30,31-Bishomohopane-22S | 65.7 | 3.20 | 52.8 | 1.53 | 2080 | 76.2 |
| H32R | T27 | 30,31-Bishomohopane-22R | 52.5 | 3.20 | 37.0 | 1.53 | 1380 | 76.2 |
| H33R | T30 | 30,31-Trishomohopane-22S | 40.2 | 3.20 | 29.9 | 1.53 | 1460 | 76.2 |
| H33S | T31 | 30,31-Trishomohopane-22R | 26.6 | 3.20 | 17.8 | 1.53 | 918 | 76.2 |
| H34R | T32 | Tetrakishomohopane-22S | 33.0 | 3.20 | 21.6 | 1.53 | 1020 | 76.2 |
| H34S | T33 | Tetrakishomohopane-22R | 17.9 | 3.20 | 11.8 | 1.53 | 649 | 76.2 |
| H35S | T34 | Pentakishomohopane-22S | 28.5 | 3.20 | 18.2 | 1.53 | 1180 | 76.2 |
| H35R | T35 | Pentakishomohopane-22R | 17.3 | 3.20 | 11.9 | 1.53 | 719 | 76.2 |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | 23.3 | 3.20 | 23.2 | 1.53 | 413 | 76.2 |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | 12.0 | 3.20 | 12.3 | 1.53 | 208 | 76.2 |
| d28S | S8 | 13b,17a-20S-Methyldiacholestane | 16.6 | 3.20 | 16.1 | 1.53 | 227 | 76.2 |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12) | 46.0 | 3.20 | 48.7 | 1.53 | 841 | 76.2 |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17) | 58.7 | 3.20 | 63.5 | 1.53 | 1090 | 76.2 |
| d29R | S18 | Unknown Sterane (S18) | 7.48 | 3.20 | 6.33 | 1.53 | 160 | 76.2 |
| d29S | S19 | 13a,17b-20S-Ethyldiacholestane | 3.84 | 3.20 | 3.75 | 1.53 | 83.2 | 76.2 |
| aa28S | S20 | 14a,17a-20S-Methyldiacholestane | 26.9 | 3.20 | 25.8 | 1.53 | 630 | 76.2 |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | 27.9 | 3.20 | 28.6 | 1.53 | 543 | 76.2 |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethyldiacholestane | 39.8 | 3.20 | 40.4 | 1.53 | 835 | 76.2 |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethyldiacholestane | 40.4 | 3.20 | 39.3 | 1.53 | 898 | 76.2 |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | 44.0 | 3.20 | 51.7 | 1.53 | 738 | 76.2 |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | 42.9 | 3.20 | 49.0 | 1.53 | 730 | 76.2 |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | 38.0 | 3.20 | 41.8 | 1.53 | 763 | 76.2 |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | 48.7 | 3.20 | 51.4 | 1.53 | 946 | 76.2 |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethyldiacholestane | 62.2 | 3.20 | 62.4 | 1.53 | 1240 | 76.2 |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethyldiacholestane | 37.0 | 3.20 | 46.7 | 1.53 | 988 | 76.2 |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | 168 | 3.20 | 176 | 1.53 | 3850 | 76.2 |
| SC28TA | SC28TA | C28,20S- triaromatic steroid | 120 | 3.20 | 111 | 1.53 | 2850 | 76.2 |
| RC27TA | RC27TA | C27,20R- triaromatic steroid | 117 | 3.20 | 116 | 1.53 | 2680 | 76.2 |
| RC28TA | RC28TA | C28,20R- triaromatic steroid | 91.6 | 3.20 | 85.2 | 1.53 | 2370 | 76.2 |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | 23.1 | 3.20 | 16.6 | 1.53 | 834 | 76.2 |

| Surrogates (% Recovery) | | | |
|-------------------------|-----|-----|-----|
| Naphthalene-d8 | 89 | 99 | 86 |
| Phenanthrene-d10 | 102 | 107 | 98 |
| Benzo[a]pyrene-d12 | 86 | 87 | 83 |
| 5B(H)Cholane | N/A | N/A | N/A |



Project Name: GZA-642 Allens Ave
 Project Number:

| | Oil Water Separator 1203044-04 | Oil Water Separator 1203044-05 |
|-------------------|-----------------------------------|-----------------------------------|
| Client ID | | |
| Lab ID | 1203044-04 | 1203044-05 |
| Matrix | Solid | Water |
| Reference Method | Modified 8270C | Modified 8270C |
| Batch ID | SS032312B05 | SW032312B06 |
| Date Collected | 02/24/2012 | 02/24/2012 |
| Date Received | 02/28/2012 | 02/28/2012 |
| Date Prepped | 02/29/2012 | 02/29/2012 |
| Date Analyzed | 03/27/2012 | 03/28/2012 |
| Sample Size (wet) | 0.00816 | 1050 |
| % Solid | 100.00 | 100.00 |
| File ID | a810158.D | a810175.D |
| Units | mg/Kg | ng/L |
| Final Volume | 2 | 2 |
| Dilution | 1 | 1 |
| Reporting Limit | 2.45 | 19.0 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL |
|-------|--------|---|--------|--------|--------|--------|
| 2 | D0 | cis/trans-Decalin | 0.515 | J 2.45 | 166 | 19.0 |
| 2 | D1 | C1-Decalins | 2.40 | J 2.45 | 139 | 19.0 |
| 2 | D2 | C2-Decalins | 15.6 | 2.45 | 148 | 19.0 |
| 2 | D3 | C3-Decalins | 65.4 | 2.45 | 121 | 19.0 |
| 2 | D4 | C4-Decalins | 967 | 2.45 | 404 | 19.0 |
| 2 | BT0 | Benzo(b)thiophene | 1.86 | J 2.45 | 3850 | 19.0 |
| 2 | BT1 | C1-Benzo(b)thiophenes | 14.1 | 2.45 | 2410 | 19.0 |
| 2 | BT2 | C2-Benzo(b)thiophenes | 77.6 | 2.45 | 1790 | 19.0 |
| 2 | BT3 | C3-Benzo(b)thiophenes | 415 | 2.45 | 1180 | 19.0 |
| 2 | BT4 | C4-Benzo(b)thiophenes | 560 | 2.45 | 714 | 19.0 |
| 2 | N0 | Naphthalene | 27.1 | 2.45 | 229 | 19.0 |
| 2 | N1 | C1-Naphthalenes | 87.5 | 2.45 | 11000 | 19.0 |
| 2 | N2 | C2-Naphthalenes | 1440 | 2.45 | 13700 | 19.0 |
| 2 | N3 | C3-Naphthalenes | 6160 | 2.45 | 8510 | 19.0 |
| 2 | N4 | C4-Naphthalenes | 6140 | 2.45 | 3590 | 19.0 |
| 2 | B | Biphenyl | 17.8 | 2.45 | 253 | 19.0 |
| 3 | DF | Dibenzofuran | 108 | 2.45 | 1390 | 19.0 |
| 3 | AY | Acenaphthylene | 98.4 | 2.45 | 362 | 19.0 |
| 3 | AE | Acenaphthene | 213 | 2.45 | 7760 | 19.0 |
| 3 | F0 | Fluorene | 243 | 2.45 | 3600 | 19.0 |
| 3 | F1 | C1-Fluorenes | 955 | 2.45 | 1960 | 19.0 |
| 3 | F2 | C2-Fluorenes | 2110 | 2.45 | 1350 | 19.0 |
| 3 | F3 | C3-Fluorenes | 1380 | 2.45 | 569 | 19.0 |
| 3 | A0 | Anthracene | 269 | 2.45 | 912 | 19.0 |
| 3 | P0 | Phenanthrene | 1180 | 2.45 | 2010 | 19.0 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | 2880 | 2.45 | 1860 | 19.0 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | 2600 | 2.45 | 915 | 19.0 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | 978 | 2.45 | 256 | 19.0 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | 256 | 2.45 | 73.2 | 19.0 |
| 3 | RET | Retene | U | 2.45 | U | 19.0 |
| 3 | DBT0 | Dibenzothiophene | 256 | 2.45 | 684 | 19.0 |
| 3 | DBT1 | C1-Dibenzothiophenes | 945 | 2.45 | 832 | 19.0 |
| 3 | DBT2 | C2-Dibenzothiophenes | 1020 | 2.45 | 396 | 19.0 |
| 3 | DBT3 | C3-Dibenzothiophenes | 535 | 2.45 | 174 | 19.0 |
| 3 | DBT4 | C4-Dibenzothiophenes | 185 | 2.45 | 56.9 | 19.0 |
| 4 | BF | Benzo(b)fluorene | 126 | 2.45 | 55.3 | 19.0 |
| 4 | FL0 | Fluoranthene | 668 | 2.45 | 578 | 19.0 |
| 4 | PY0 | Pyrene | 625 | 2.45 | 675 | 19.0 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | 475 | 2.45 | 331 | 19.0 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | 184 | 2.45 | 102 | 19.0 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | 84.9 | 2.45 | 40.8 | 19.0 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | 49.2 | 2.45 | U | 19.0 |
| 4 | NBT0 | Naphthobenzothiophenes | 78.6 | 2.45 | 40.7 | 19.0 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | 46.8 | 2.45 | 23.2 | 19.0 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | 38.8 | 2.45 | U | 19.0 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | 23.7 | 2.45 | U | 19.0 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | 15.3 | 2.45 | U | 19.0 |
| 4 | BA0 | Benzo[a]anthracene | 234 | 2.45 | 62.2 | 19.0 |
| 4 | C0 | Chrysene/Triphenylene | 220 | 2.45 | 70.4 | 19.0 |
| 4 | BC1 | C1-Chrysenes | 112 | 2.45 | 38.0 | 19.0 |
| 4 | BC2 | C2-Chrysenes | 63.2 | 2.45 | 25.8 | 19.0 |
| 4 | BC3 | C3-Chrysenes | 46.3 | 2.45 | U | 19.0 |
| 4 | BC4 | C4-Chrysenes | 26.3 | 2.45 | U | 19.0 |
| 5 | BBF | Benzo[b]fluoranthene | 162 | 2.45 | 26.2 | 19.0 |
| 5 | BJKF | Benzo[j]fluoranthene/Benzo[k]fluoranthene | 166 | 2.45 | 26.6 | 19.0 |
| 5 | BAF | Benzo[a]fluoranthene | 45.5 | 2.45 | 9.56 | J 19.0 |
| 5 | BEP | Benzo[e]pyrene | 134 | 2.45 | 22.5 | 19.0 |
| 5 | BAP | Benzo[a]pyrene | 184 | 2.45 | 29.9 | 19.0 |
| 5 | PER | Perylene | 33.8 | 2.45 | 5.85 | J 19.0 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 101 | 2.45 | 13.8 | J 19.0 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 29.9 | 2.45 | 4.85 | J 19.0 |
| 6 | GHI | Benzo[ghi]perylene | 101 | 2.45 | 13.8 | J 19.0 |
| 6 | CAR | Carbazole | 13.9 | 2.45 | 65.3 | 19.0 |
| 3 | 4MDT | 4-Methylidibenzothiophene | 391 | 2.45 | 287 | 19.0 |
| 3 | 2MDT | 2/3-Methylidibenzothiophene | 403 | 2.45 | 366 | 19.0 |
| 3 | 1MDT | 1-Methylidibenzothiophene | 83.4 | 2.45 | 91.8 | 19.0 |
| 3 | 3MP | 3-Methylphenanthrene | 809 | 2.45 | 418 | 19.0 |
| 3 | 2MP | 2/4-Methylphenanthrene | 917 | 2.45 | 420 | 19.0 |
| 3 | 2MA | 2-Methylanthracene | 136 | 2.45 | 132 | 19.0 |
| 3 | 9MP | 9-Methylphenanthrene | 620 | 2.45 | 501 | 19.0 |
| 3 | 1MP | 1-Methylphenanthrene | 340 | 2.45 | 336 | 19.0 |



Project Name: GZA-642 Allens Ave
 Project Number:

| | Oil Water Separator | Oil Water Separator |
|-------------------|---------------------|---------------------|
| Client ID | 1203044-04 | 1203044-05 |
| Lab ID | | |
| Matrix | Solid | Water |
| Reference Method | Modified 8270C | Modified 8270C |
| Batch ID | SS032312B05 | SW032312B06 |
| Date Collected | 02/24/2012 | 02/24/2012 |
| Date Received | 02/28/2012 | 02/28/2012 |
| Date Prepped | 02/29/2012 | 02/29/2012 |
| Date Analyzed | 03/27/2012 | 03/28/2012 |
| Sample Size (wet) | 0.00816 | 1050 |
| % Solid | 100.00 | 100.00 |
| File ID | a810158.D | a810175.D |
| Units | mg/Kg | ng/L |
| Final Volume | 2 | 2 |
| Dilution | 1 | 1 |
| Reporting Limit | 2.45 | 19.0 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL |
|-------------|-------------|--|--------|--------|--------|--------|
| t23 | T4 | C23 Tricyclic Terpene | 19.5 | 2.45 | | |
| t24 | T5 | C24 Tricyclic Terpene | 9.88 | 2.45 | U | 19.0 |
| t25 | T6 | C25 Tricyclic Terpene | 9.77 | 2.45 | U | 19.0 |
| te24 | T6a | C24 Tetracyclic Terpene | 4.79 | 2.45 | U | 19.0 |
| t26S | T6b | C26 Tricyclic Terpene-22S | 3.85 | 2.45 | U | 19.0 |
| t26R | T6c | C26 Tricyclic Terpene-22R | 3.56 | 2.45 | U | 19.0 |
| t28S | T7 | C28 Tricyclic Terpene-22S | 4.22 | 2.45 | U | 19.0 |
| t28R | T8 | C28 Tricyclic Terpene-22R | 3.36 | 2.45 | U | 19.0 |
| t29S | T9 | C29 Tricyclic Terpene-22S | 2.99 | 2.45 | U | 19.0 |
| t29R | T10 | C29 Tricyclic Terpene-22R | 2.94 | 2.45 | U | 19.0 |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | 11.7 | 2.45 | U | 19.0 |
| t30S | T11a | C30 Tricyclic Terpene-22S | 4.73 | 2.45 | U | 19.0 |
| t30R | T11b | C30 Tricyclic Terpene-22R | 4.32 | 2.45 | U | 19.0 |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | 13.0 | 2.45 | U | 19.0 |
| BNH | T14a | 17a/b,21b/a 28,30-Bisnorhopane | 2.37 | J 2.45 | U | 19.0 |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | 1.76 | J 2.45 | U | 19.0 |
| H29 | T15 | 30-Norhopane | 26.9 | 2.45 | 14.7 | J 19.0 |
| C29Ts | T16 | 18a(H)-30-Norneohopane-C29Ts | 8.78 | 2.45 | U | 19.0 |
| X | X | 17a(H)-Diahopane | 3.31 | 2.45 | U | 19.0 |
| M29 | T17 | 30-Normoretane | 6.39 | 2.45 | U | 19.0 |
| OL | T18 | 18a(H)&18b(H)-Oleananes | 5.35 | 2.45 | U | 19.0 |
| H30 | T19 | Hopane | 45.8 | 2.45 | U | 19.0 |
| M30 | T20 | Moretane | 6.70 | 2.45 | U | 19.0 |
| H31S | T21 | 30-Homohopane-22S | 11.9 | 2.45 | U | 19.0 |
| H31R | T22 | 30-Homohopane-22R | 11.0 | 2.45 | U | 19.0 |
| H32S | T26 | 30,31-Bishomohopane-22S | 9.40 | 2.45 | U | 19.0 |
| H32R | T27 | 30,31-Bishomohopane-22R | 5.11 | 2.45 | U | 19.0 |
| H33R | T30 | 30,31-Trishomohopane-22S | 4.31 | 2.45 | U | 19.0 |
| H33S | T31 | 30,31-Trishomohopane-22R | 3.26 | 2.45 | U | 19.0 |
| H34R | T32 | Tetrakishomohopane-22S | 2.16 | J 2.45 | U | 19.0 |
| H34S | T33 | Tetrakishomohopane-22R | U | 2.45 | U | 19.0 |
| H35S | T34 | Pentakishomohopane-22S | U | 2.45 | U | 19.0 |
| H35R | T35 | Pentakishomohopane-22R | U | 2.45 | U | 19.0 |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | 13.9 | 2.45 | U | 19.0 |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | 7.58 | 2.45 | U | 19.0 |
| d28S | S8 | 13b,17a-20S-Methylcholestane | 5.92 | 2.45 | U | 19.0 |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethylcholestane (S12) | 17.2 | 2.45 | U | 19.0 |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethylcholestane (S17) | 18.6 | 2.45 | U | 19.0 |
| d29R | S18 | Unknown Sterane (S18) | 4.87 | 2.45 | U | 19.0 |
| d29S | S19 | 13a,17b-20S-Ethylcholestane | U | 2.45 | U | 19.0 |
| aa28S | S20 | 14a,17a-20S-Methylcholestane | 8.14 | 2.45 | U | 19.0 |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | 7.79 | 2.45 | U | 19.0 |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethylcholestane | 9.75 | 2.45 | U | 19.0 |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethylcholestane | 7.27 | 2.45 | U | 19.0 |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | 9.23 | 2.45 | U | 19.0 |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | 9.84 | 2.45 | U | 19.0 |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | 8.29 | 2.45 | U | 19.0 |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | 10.4 | 2.45 | U | 19.0 |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethylcholestane | 12.6 | 2.45 | U | 19.0 |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethylcholestane | 7.12 | 2.45 | U | 19.0 |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | 22.4 | 2.45 | U | 19.0 |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | 18.7 | 2.45 | U | 19.0 |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | 13.4 | 2.45 | U | 19.0 |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | 11.4 | 2.45 | U | 19.0 |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | 3.00 | 2.45 | U | 19.0 |

| Surrogates (% Recovery) | | |
|-------------------------|-----|-----|
| Naphthalene-d8 | 101 | 81 |
| Phenanthrene-d10 | 96 | 95 |
| Benzo[a]pyrene-d12 | 90 | 82 |
| 5B(H)Cholane | N/A | N/A |



U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
a: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
a: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|----------------|
| Client ID | Method Blank |
| Lab ID | SS032612B05 |
| Matrix | Solid |
| Reference Method | Modified 8270C |
| Batch ID | SS032612B05 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 03/12/2012 |
| Date Analyzed | 03/27/2012 |
| Sample Size (wet) | 0.3 |
| % Solid | 100.00 |
| File ID | a810163.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0667 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|---|---------|----------|
| 2 | D0 | cis/trans-Decalin | U | 0.0667 |
| 2 | D1 | C1-Decalins | U | 0.0667 |
| 2 | D2 | C2-Decalins | U | 0.0667 |
| 2 | D3 | C3-Decalins | U | 0.0667 |
| 2 | D4 | C4-Decalins | U | 0.0667 |
| 2 | BT0 | Benzo(b)thiophene | U | 0.0667 |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 0.0667 |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 0.0667 |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 0.0667 |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 0.0667 |
| 2 | N0 | Naphthalene | 0.0214 | J 0.0667 |
| 2 | N1 | C1-Naphthalenes | 0.0123 | J 0.0667 |
| 2 | N2 | C2-Naphthalenes | U | 0.0667 |
| 2 | N3 | C3-Naphthalenes | U | 0.0667 |
| 2 | N4 | C4-Naphthalenes | U | 0.0667 |
| 2 | B | Biphenyl | U | 0.0667 |
| 3 | DF | Dibenzofuran | U | 0.0667 |
| 3 | AY | Acenaphthylene | 0.00598 | J 0.0667 |
| 3 | AE | Acenaphthene | U | 0.0667 |
| 3 | F0 | Fluorene | U | 0.0667 |
| 3 | F1 | C1-Fluorenes | U | 0.0667 |
| 3 | F2 | C2-Fluorenes | U | 0.0667 |
| 3 | F3 | C3-Fluorenes | U | 0.0667 |
| 3 | A0 | Anthracene | U | 0.0667 |
| 3 | P0 | Phenanthrene | 0.00357 | J 0.0667 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 0.0667 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 0.0667 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 0.0667 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 0.0667 |
| 3 | RET | Retene | U | 0.0667 |
| 3 | DBT0 | Dibenzothiophene | 0.00339 | J 0.0667 |
| 3 | DBT1 | C1-Dibenzothiophenes | 0.0113 | J 0.0667 |
| 3 | DBT2 | C2-Dibenzothiophenes | 0.0273 | J 0.0667 |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 0.0667 |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 0.0667 |
| 4 | BF | Benzo(b)fluorene | U | 0.0667 |
| 4 | FL0 | Fluoranthene | U | 0.0667 |
| 4 | PY0 | Pyrene | U | 0.0667 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 0.0667 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 0.0667 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 0.0667 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 0.0667 |
| 4 | NBT0 | Naphthobenzothiophenes | U | 0.0667 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 0.0667 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 0.0667 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 0.0667 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 0.0667 |
| 4 | BA0 | Benzo[a]anthracene | U | 0.0667 |
| 4 | C0 | Chrysene/Triphenylene | U | 0.0667 |
| 4 | BC1 | C1-Chrysenes | U | 0.0667 |
| 4 | BC2 | C2-Chrysenes | U | 0.0667 |
| 4 | BC3 | C3-Chrysenes | U | 0.0667 |
| 4 | BC4 | C4-Chrysenes | U | 0.0667 |
| 5 | BBF | Benzo(b)fluoranthene | U | 0.0667 |
| 5 | BJKF | Benzo(j)fluoranthene/Benzo(k)fluoranthene | U | 0.0667 |
| 5 | BAF | Benzo(a)fluoranthene | U | 0.0667 |
| 5 | BEP | Benzo(e)pyrene | U | 0.0667 |
| 5 | BAP | Benzo(a)pyrene | U | 0.0667 |
| 5 | PER | Perylene | U | 0.0667 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | U | 0.0667 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | U | 0.0667 |
| 6 | GHI | Benzo[g,h,i]perylene | U | 0.0667 |
| 6 | CAR | Carbazole | U | 0.0667 |
| 3 | 4MDT | 4-Methylbenzothiophene | 0.00237 | J 0.0667 |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | U | 0.0667 |
| 3 | 1MDT | 1-Methylbenzothiophene | 0.00432 | J 0.0667 |
| 3 | 3MP | 3-Methylphenanthrene | U | 0.0667 |
| 3 | 2MP | 2/4-Methylphenanthrene | U | 0.0667 |
| 3 | 2MA | 2-Methylanthracene | U | 0.0667 |
| 3 | 9MP | 9-Methylphenanthrene | U | 0.0667 |
| 3 | 1MP | 1-Methylphenanthrene | U | 0.0667 |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|----------------|
| Client ID | Method Blank |
| Lab ID | SS032612B05 |
| Matrix | Solid |
| Reference Method | Modified 8270C |
| Batch ID | SS032612B05 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 03/12/2012 |
| Date Analyzed | 03/27/2012 |
| Sample Size (wet) | 0.3 |
| % Solid | 100.00 |
| File ID | a810163.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0667 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------------|-------------|--|--------|--------|
| t23 | T4 | C23 Tricyclic Terpene | U | 0.0667 |
| t24 | T5 | C24 Tricyclic Terpene | U | 0.0667 |
| t25 | T6 | C25 Tricyclic Terpene | U | 0.0667 |
| te24 | T6a | C24 Tetracyclic Terpene | U | 0.0667 |
| t26S | T6b | C26 Tricyclic Terpene-22S | U | 0.0667 |
| t26R | T6c | C26 Tricyclic Terpene-22R | U | 0.0667 |
| t28S | T7 | C28 Tricyclic Terpene-22S | U | 0.0667 |
| t28R | T8 | C28 Tricyclic Terpene-22R | U | 0.0667 |
| t29S | T9 | C29 Tricyclic Terpene-22S | U | 0.0667 |
| t29R | T10 | C29 Tricyclic Terpene-22R | U | 0.0667 |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | U | 0.0667 |
| t30S | T11a | C30 Tricyclic Terpene-22S | U | 0.0667 |
| t30R | T11b | C30 Tricyclic Terpene-22R | U | 0.0667 |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | U | 0.0667 |
| BNH | T14a | 17a/b,21b/a 28,30-Bisnorhopane | U | 0.0667 |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | U | 0.0667 |
| H29 | T15 | 30-Norhopane | U | 0.0667 |
| C29Ts | T16 | 18a(H)-30-Norhopane-C29Ts | U | 0.0667 |
| X | X | 17a(H)-Diahopane | U | 0.0667 |
| M29 | T17 | 30-Normoretane | U | 0.0667 |
| OL | T18 | 18a(H)&18b(H)-Oleananes | U | 0.0667 |
| H30 | T19 | Hopane | U | 0.0667 |
| M30 | T20 | Moretane | U | 0.0667 |
| H31S | T21 | 30-Homohopane-22S | U | 0.0667 |
| H31R | T22 | 30-Homohopane-22R | U | 0.0667 |
| H32S | T26 | 30,31-Bishomohopane-22S | U | 0.0667 |
| H32R | T27 | 30,31-Bishomohopane-22R | U | 0.0667 |
| H33R | T30 | 30,31-Trishomohopane-22S | U | 0.0667 |
| H33S | T31 | 30,31-Trishomohopane-22R | U | 0.0667 |
| H34R | T32 | Tetrakishomohopane-22S | U | 0.0667 |
| H34S | T33 | Tetrakishomohopane-22R | U | 0.0667 |
| H35S | T34 | Pentakishomohopane-22S | U | 0.0667 |
| H35R | T35 | Pentakishomohopane-22R | U | 0.0667 |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | U | 0.0667 |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | U | 0.0667 |
| d28S | S8 | 13b,17a-20S-Methylcholestane | U | 0.0667 |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethylcholestane (S12) | U | 0.0667 |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethylcholestane (S17) | U | 0.0667 |
| d29R | S18 | Unknown Sterane (S18) | U | 0.0667 |
| d29S | S19 | 13a,17b-20S-Ethylcholestane | U | 0.0667 |
| aa28S | S20 | 14a,17a-20S-Methylcholestane | U | 0.0667 |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | U | 0.0667 |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethylcholestane | U | 0.0667 |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethylcholestane | U | 0.0667 |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | U | 0.0667 |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | U | 0.0667 |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | U | 0.0667 |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | U | 0.0667 |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethylcholestane | U | 0.0667 |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethylcholestane | U | 0.0667 |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | U | 0.0667 |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | U | 0.0667 |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | U | 0.0667 |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | U | 0.0667 |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | U | 0.0667 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| Naphthalene-d8 | 74 |
| Phenanthrene-d10 | 95 |
| Benzo[a]pyrene-d12 | 79 |
| 5B(H)Cholane | NA |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------|
| Client ID | Laboratory Control |
| Lab ID | Sample |
| Matrix | SS032612LCS04 |
| Reference Method | Solid |
| Batch ID | Modified 8270C |
| Date Collected | SS032612B05 |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 03/12/2012 |
| Sample Size (wet) | 03/27/2012 |
| % Solid | 0.3 |
| File ID | 100.00 |
| Units | a810164.D |
| Final Volume | mg/Kg |
| Dilution | 2 |
| Reporting Limit | 1 |
| | 0.0667 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---|--------|--------|-------|-------------|-------------|-------------|
| 2 | D0 | o&trans-Decalin | U | 0.0667 | | | | |
| 2 | D1 | C1-Decalins | U | 0.0667 | | | | |
| 2 | D2 | C2-Decalins | U | 0.0667 | | | | |
| 2 | D3 | C3-Decalins | U | 0.0667 | | | | |
| 2 | D4 | C4-Decalins | U | 0.0667 | | | | |
| 2 | BT0 | Benzo[thiophene] | U | 0.0667 | | | | |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 0.0667 | | | | |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 0.0667 | | | | |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 0.0667 | | | | |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 0.0667 | | | | |
| 2 | N0 | Naphthalene | 2.82 S | 0.0667 | 85 | 3.33 | 50 | 130 |
| 2 | N1 | C1-Naphthalenes | U | 0.0667 | | | | |
| 2 | N2 | C2-Naphthalenes | U | 0.0667 | | | | |
| 2 | N3 | C3-Naphthalenes | U | 0.0667 | | | | |
| 2 | N4 | C4-Naphthalenes | U | 0.0667 | | | | |
| 2 | B | Biphenyl | U | 0.0667 | | | | |
| 3 | DF | Dibenzofuran | U | 0.0667 | | | | |
| 3 | AY | Acenaphthylene | 3.16 S | 0.0667 | 95 | 3.33 | 50 | 130 |
| 3 | AE | Acenaphthene | 3.24 S | 0.0667 | 97 | 3.33 | 50 | 130 |
| 3 | F0 | Fluorene | 3.14 S | 0.0667 | 94 | 3.33 | 50 | 130 |
| 3 | F1 | C1-Fluorenes | U | 0.0667 | | | | |
| 3 | F2 | C2-Fluorenes | U | 0.0667 | | | | |
| 3 | F3 | C3-Fluorenes | U | 0.0667 | | | | |
| 3 | A0 | Anthracene | 3.22 S | 0.0667 | 97 | 3.33 | 50 | 130 |
| 3 | P0 | Phenanthrene | 3.10 S | 0.0667 | 93 | 3.33 | 50 | 130 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 0.0667 | | | | |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 0.0667 | | | | |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 0.0667 | | | | |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 0.0667 | | | | |
| 3 | RET | Retene | U | 0.0667 | | | | |
| 3 | DBT0 | Dibenzothiophene | U | 0.0667 | | | | |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 0.0667 | | | | |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 0.0667 | | | | |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 0.0667 | | | | |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 0.0667 | | | | |
| 4 | BF | Benzo[fluorene] | U | 0.0667 | | | | |
| 4 | FL0 | Fluoranthene | 3.35 S | 0.0667 | 100 | 3.33 | 50 | 130 |
| 4 | PY0 | Pyrene | 3.56 S | 0.0667 | 107 | 3.33 | 50 | 130 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 0.0667 | | | | |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 0.0667 | | | | |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 0.0667 | | | | |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 0.0667 | | | | |
| 4 | NBT0 | Naphthobenzothiophenes | U | 0.0667 | | | | |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 0.0667 | | | | |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 0.0667 | | | | |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 0.0667 | | | | |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 0.0667 | | | | |
| 4 | BA0 | Benz[anthracene] | 3.04 S | 0.0667 | 91 | 3.33 | 50 | 130 |
| 4 | C0 | Chrysene/Triphenylene | 3.26 S | 0.0667 | 98 | 3.33 | 50 | 130 |
| 4 | BC1 | C1-Chrysenes | U | 0.0667 | | | | |
| 4 | BC2 | C2-Chrysenes | U | 0.0667 | | | | |
| 4 | BC3 | C3-Chrysenes | U | 0.0667 | | | | |
| 4 | BC4 | C4-Chrysenes | U | 0.0667 | | | | |
| 5 | BBF | Benzo[fluoranthene] | 2.70 S | 0.0667 | 81 | 3.33 | 50 | 130 |
| 5 | BJKF | Benzo[fluoranthene]/Benzo[fluoranthene] | 3.46 S | 0.0667 | 104 | 3.33 | 50 | 130 |
| 5 | BAF | Benzo[fluoranthene] | U | 0.0667 | | | | |
| 5 | BEP | Benzo[pyrene] | U | 0.0667 | | | | |
| 5 | BAP | Benzo[a]pyrene | 3.20 S | 0.0667 | 96 | 3.33 | 50 | 130 |
| 5 | PER | Perylene | U | 0.0667 | | | | |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 2.73 S | 0.0667 | 82 | 3.33 | 50 | 130 |
| 6 | DA | Dibenz[anthracene]/Dibenz[anthracene] | 2.74 S | 0.0667 | 82 | 3.33 | 50 | 130 |
| 6 | GHI | Benzo[ghi]perylene | 2.79 S | 0.0667 | 84 | 3.33 | 50 | 130 |
| | CAR | Carbazole | U | 0.0667 | | | | |
| 3 | 4MDT | 4-Methyldibenzothiophene | U | 0.0667 | | | | |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | U | 0.0667 | | | | |
| 3 | 1MDT | 1-Methyldibenzothiophene | U | 0.0667 | | | | |
| 3 | 3MP | 3-Methylphenanthrene | U | 0.0667 | | | | |
| 3 | 2MP | 2/4-Methylphenanthrene | U | 0.0667 | | | | |
| 3 | 2MA | 2-Methylantracene | U | 0.0667 | | | | |
| 3 | 9MP | 9-Methylphenanthrene | U | 0.0667 | | | | |
| 3 | 1MP | 1-Methylphenanthrene | U | 0.0667 | | | | |



Project Name: GZA-642 Allens Ave
Project Number:

Laboratory Control

| | |
|-------------------|----------------|
| Client ID | |
| Lab ID | SS032612LCS04 |
| Matrix | Solid |
| Reference Method | Modified 8270C |
| Batch ID | SS032612B05 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 03/12/2012 |
| Date Analyzed | 03/27/2012 |
| Sample Size (wet) | 0.3 |
| % Solid | 100.00 |
| File ID | a810164.D |
| Units | mg/kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0667 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------------|-------------|---|--------|--------|-------|-------------|-------------|-------------|
| t23 | T4 | C23 Tricyclic Terpene | U | 0.0667 | | | | |
| t24 | T5 | C24 Tricyclic Terpene | U | 0.0667 | | | | |
| t25 | T6 | C25 Tricyclic Terpene | U | 0.0667 | | | | |
| te24 | T6a | C24 Tetracyclic Terpene | U | 0.0667 | | | | |
| t26S | T6b | C26 Tricyclic Terpene-22S | U | 0.0667 | | | | |
| t26R | T6c | C26 Tricyclic Terpene-22R | U | 0.0667 | | | | |
| t28S | T7 | C28 Tricyclic Terpene-22S | U | 0.0667 | | | | |
| t28R | T8 | C28 Tricyclic Terpene-22R | U | 0.0667 | | | | |
| t29S | T9 | C29 Tricyclic Terpene-22S | U | 0.0667 | | | | |
| t29R | T10 | C29 Tricyclic Terpene-22R | U | 0.0667 | | | | |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | U | 0.0667 | | | | |
| t30S | T11a | C30 Tricyclic Terpene-22S | U | 0.0667 | | | | |
| t30R | T11b | C30 Tricyclic Terpene-22R | U | 0.0667 | | | | |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | U | 0.0667 | | | | |
| BNH | T14a | 17a(b),21b(a) 28,30-Bisnorhopane | U | 0.0667 | | | | |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | U | 0.0667 | | | | |
| H29 | T15 | 30-Norhopane | U | 0.0667 | | | | |
| C29Ts | T16 | 18a(H)-30-Norhopane-C29Ts | U | 0.0667 | | | | |
| X | X | 17a(H)-Diahopane | U | 0.0667 | | | | |
| M29 | T17 | 30-Normoretane | U | 0.0667 | | | | |
| OL | T18 | 18a(H)&18b(H)-Oleananes | U | 0.0667 | | | | |
| H30 | T19 | Hopane | U | 0.0667 | | | | |
| M30 | T20 | Moretane | U | 0.0667 | | | | |
| H31S | T21 | 30-Homohopane-22S | U | 0.0667 | | | | |
| H31R | T22 | 30-Homohopane-22R | U | 0.0667 | | | | |
| H32S | T26 | 30,31-Bishomohopane-22S | U | 0.0667 | | | | |
| H32R | T27 | 30,31-Bishomohopane-22R | U | 0.0667 | | | | |
| H33R | T30 | 30,31-Trishomohopane-22S | U | 0.0667 | | | | |
| H33S | T31 | 30,31-Trishomohopane-22R | U | 0.0667 | | | | |
| H34R | T32 | Tetrakishomohopane-22S | U | 0.0667 | | | | |
| H34S | T33 | Tetrakishomohopane-22R | U | 0.0667 | | | | |
| H35S | T34 | Pentakishomohopane-22S | U | 0.0667 | | | | |
| H35R | T35 | Pentakishomohopane-22R | U | 0.0667 | | | | |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | U | 0.0667 | | | | |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | U | 0.0667 | | | | |
| d28S | S8 | 13b,17a-20S-Methyldiacholestane | U | 0.0667 | | | | |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12) | U | 0.0667 | | | | |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17) | U | 0.0667 | | | | |
| d29R | S18 | Unknown Sterane (S18) | U | 0.0667 | | | | |
| d29S | S19 | 13a,17b-20S-Ethyldiacholestane | U | 0.0667 | | | | |
| aa28S | S20 | 14a,17a-20S-Methylcholestane | U | 0.0667 | | | | |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | U | 0.0667 | | | | |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethylcholestane | U | 0.0667 | | | | |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethylcholestane | U | 0.0667 | | | | |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | U | 0.0667 | | | | |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | U | 0.0667 | | | | |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | U | 0.0667 | | | | |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | U | 0.0667 | | | | |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethylcholestane | U | 0.0667 | | | | |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethylcholestane | U | 0.0667 | | | | |
| RC26/SC27TA | RC26/SC27TA | C26,20R +C27,20S-triaromatic steroid | U | 0.0667 | | | | |
| SC28TA | RC28TA | C28,20S-triaromatic steroid | U | 0.0667 | | | | |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | U | 0.0667 | | | | |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | U | 0.0667 | | | | |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | U | 0.0667 | | | | |

Surrogates (% Recovery)
Naphthalene-d8 85
Phenanthrene-d10 91
Benzo[a]pyrene-d12 79
5B(H)Cholane NA



Project Name: GZA-642 Allens Ave
 Project Number:

Laboratory Control
 Sample Duplicate
 SS032612LCS004
 Solid
 Modified 8270C
 SS032612B05
 N/A
 N/A
 03/12/2012
 03/27/2012
 0.3
 100.00
 a810165.D
 mg/Kg
 2
 1
 0.0667

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|---|--------|--------|-------|-------------|-------------|-------------|-----|-----------|
| 2 | D0 | o&trans-Decalin | U | 0.0667 | | | | | | |
| 2 | D1 | C1-Decalins | U | 0.0667 | | | | | | |
| 2 | D2 | C2-Decalins | U | 0.0667 | | | | | | |
| 2 | D3 | C3-Decalins | U | 0.0667 | | | | | | |
| 2 | D4 | C4-Decalins | U | 0.0667 | | | | | | |
| 2 | BT0 | Benzo[thiophene] | U | 0.0667 | | | | | | |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 0.0667 | | | | | | |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 0.0667 | | | | | | |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 0.0667 | | | | | | |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 0.0667 | | | | | | |
| 2 | N0 | Naphthalene | 2.74 S | 0.0667 | 82 | 3.33 | 50 | 130 | 3 | 30 |
| 2 | N1 | C1-Naphthalenes | U | 0.0667 | | | | | | |
| 2 | N2 | C2-Naphthalenes | U | 0.0667 | | | | | | |
| 2 | N3 | C3-Naphthalenes | U | 0.0667 | | | | | | |
| 2 | N4 | C4-Naphthalenes | U | 0.0667 | | | | | | |
| 2 | B | Biphenyl | U | 0.0667 | | | | | | |
| 3 | DF | Dibenzofuran | U | 0.0667 | | | | | | |
| 3 | AY | Acenaphthylene | 3.10 S | 0.0667 | 93 | 3.33 | 50 | 130 | 2 | 30 |
| 3 | AE | Acenaphthene | 3.17 S | 0.0667 | 95 | 3.33 | 50 | 130 | 2 | 30 |
| 3 | F0 | Fluorene | 3.06 S | 0.0667 | 92 | 3.33 | 50 | 130 | 2 | 30 |
| 3 | F1 | C1-Fluorenes | U | 0.0667 | | | | | | |
| 3 | F2 | C2-Fluorenes | U | 0.0667 | | | | | | |
| 3 | F3 | C3-Fluorenes | U | 0.0667 | | | | | | |
| 3 | A0 | Anthracene | 3.15 S | 0.0667 | 94 | 3.33 | 50 | 130 | 2 | 30 |
| 3 | P0 | Phenanthrene | 3.01 S | 0.0667 | 90 | 3.33 | 50 | 130 | 3 | 30 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | | |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | | |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | | |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | | |
| 3 | RET | Retene | U | 0.0667 | | | | | | |
| 3 | DBT0 | Dibenzothiophene | U | 0.0667 | | | | | | |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 0.0667 | | | | | | |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 0.0667 | | | | | | |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 0.0667 | | | | | | |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 0.0667 | | | | | | |
| 4 | BF | Benzo[fluorene] | U | 0.0667 | | | | | | |
| 4 | FL0 | Fluoranthene | 3.23 S | 0.0667 | 97 | 3.33 | 50 | 130 | 3 | 30 |
| 4 | PY0 | Pyrene | 3.44 S | 0.0667 | 103 | 3.33 | 50 | 130 | 4 | 30 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | | |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | | |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | | |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | | |
| 4 | NBT0 | Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | BA0 | Benz[anthracene] | 2.95 S | 0.0667 | 89 | 3.33 | 50 | 130 | 3 | 30 |
| 4 | C0 | Chrysene/Triphenylene | 3.22 S | 0.0667 | 96 | 3.33 | 50 | 130 | 1 | 30 |
| 4 | BC1 | C1-Chrysenes | U | 0.0667 | | | | | | |
| 4 | BC2 | C2-Chrysenes | U | 0.0667 | | | | | | |
| 4 | BC3 | C3-Chrysenes | U | 0.0667 | | | | | | |
| 4 | BC4 | C4-Chrysenes | U | 0.0667 | | | | | | |
| 5 | BBF | Benzo[b]fluoranthene | 2.62 S | 0.0667 | 79 | 3.33 | 50 | 130 | 3 | 30 |
| 5 | BJKF | Benzo[k]fluoranthene/Benzo[k]fluoranthene | 3.34 S | 0.0667 | 100 | 3.33 | 50 | 130 | 3 | 30 |
| 5 | BAF | Benzo[a]fluoranthene | U | 0.0667 | | | | | | |
| 5 | BEP | Benzo[e]pyrene | U | 0.0667 | | | | | | |
| 5 | BAP | Benzo[a]pyrene | 3.10 S | 0.0667 | 93 | 3.33 | 50 | 130 | 3 | 30 |
| 5 | PER | Perylene | U | 0.0667 | | | | | | |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 2.56 S | 0.0667 | 77 | 3.33 | 50 | 130 | 7 | 30 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 2.64 S | 0.0667 | 79 | 3.33 | 50 | 130 | 4 | 30 |
| 6 | GHI | Benzo[ghi]perylene | 2.72 S | 0.0667 | 81 | 3.33 | 50 | 130 | 3 | 30 |
| 6 | CAR | Carbazole | U | 0.0667 | | | | | | |
| 3 | 4MDT | 4-Methyldibenzothiophene | U | 0.0667 | | | | | | |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | U | 0.0667 | | | | | | |
| 3 | 1MDT | 1-Methyldibenzothiophene | U | 0.0667 | | | | | | |
| 3 | 3MP | 3-Methylphenanthrene | U | 0.0667 | | | | | | |
| 3 | 2MP | 2/4-Methylphenanthrene | U | 0.0667 | | | | | | |
| 3 | 2MA | 2-Methylanthracene | U | 0.0667 | | | | | | |
| 3 | 9MP | 9-Methylphenanthrene | U | 0.0667 | | | | | | |
| 3 | 1MP | 1-Methylphenanthrene | U | 0.0667 | | | | | | |



Project Name: GZA-642 Allens Ave
 Project Number:

Laboratory Control
 Sample Duplicate
 SS032612LCS004
 Solid
 Modified 8270C
 SS032612B05
 N/A
 N/A
 03/12/2012
 03/27/2012
 0.3
 100.00
 a810165.D
 mg/Kg
 2
 1
 0.0667

| Class | Abbrev | Analyses | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------------|-------------|---|--------|--------|-------|-------------|-------------|-------------|-----|-----------|
| t23 | T4 | C23 Tricyclic Terpene | U | 0.0667 | | | | | | |
| t24 | T5 | C24 Tricyclic Terpene | U | 0.0667 | | | | | | |
| t25 | T6 | C25 Tricyclic Terpene | U | 0.0667 | | | | | | |
| te24 | T6a | C24 Tetracyclic Terpene | U | 0.0667 | | | | | | |
| t26S | T6b | C26 Tricyclic Terpene-22S | U | 0.0667 | | | | | | |
| t26R | T6c | C26 Tricyclic Terpene-22R | U | 0.0667 | | | | | | |
| t28S | T7 | C28 Tricyclic Terpene-22S | U | 0.0667 | | | | | | |
| t28R | T8 | C28 Tricyclic Terpene-22R | U | 0.0667 | | | | | | |
| t29S | T9 | C29 Tricyclic Terpene-22S | U | 0.0667 | | | | | | |
| t29R | T10 | C29 Tricyclic Terpene-22R | U | 0.0667 | | | | | | |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | U | 0.0667 | | | | | | |
| t30S | T11a | C30 Tricyclic Terpene-22S | U | 0.0667 | | | | | | |
| t30R | T11b | C30 Tricyclic Terpene-22R | U | 0.0667 | | | | | | |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | U | 0.0667 | | | | | | |
| BNH | T14a | 17a(b),21b/a 28,30-Bisnorhopane | U | 0.0667 | | | | | | |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | U | 0.0667 | | | | | | |
| H29 | T15 | 30-Norhopane | U | 0.0667 | | | | | | |
| C29Ts | T16 | 18a(H)-30-Norhopane-C29Ts | U | 0.0667 | | | | | | |
| X | X | 17a(H)-Diahopane | U | 0.0667 | | | | | | |
| M29 | T17 | 30-Normoretane | U | 0.0667 | | | | | | |
| OL | T18 | 18a(H)&18b(H)-Oleananes | U | 0.0667 | | | | | | |
| H30 | T19 | Hopane | U | 0.0667 | | | | | | |
| M30 | T20 | Moretane | U | 0.0667 | | | | | | |
| H31S | T21 | 30-Homohopane-22S | U | 0.0667 | | | | | | |
| H31R | T22 | 30-Homohopane-22R | U | 0.0667 | | | | | | |
| H32S | T26 | 30,31-Bishomohopane-22S | U | 0.0667 | | | | | | |
| H32R | T27 | 30,31-Bishomohopane-22R | U | 0.0667 | | | | | | |
| H33R | T30 | 30,31-Trishomohopane-22S | U | 0.0667 | | | | | | |
| H33S | T31 | 30,31-Trishomohopane-22R | U | 0.0667 | | | | | | |
| H34R | T32 | Tetrakishomohopane-22S | U | 0.0667 | | | | | | |
| H34S | T33 | Tetrakishomohopane-22R | U | 0.0667 | | | | | | |
| H35S | T34 | Pentakishomohopane-22S | U | 0.0667 | | | | | | |
| H35R | T35 | Pentakishomohopane-22R | U | 0.0667 | | | | | | |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | U | 0.0667 | | | | | | |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | U | 0.0667 | | | | | | |
| d28S | S8 | 13b,17a-20S-Methyldiacholestane | U | 0.0667 | | | | | | |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12) | U | 0.0667 | | | | | | |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17) | U | 0.0667 | | | | | | |
| d29R | S18 | Unknown Sterane (S18) | U | 0.0667 | | | | | | |
| d29S | S19 | 13a,17b-20S-Ethyldiacholestane | U | 0.0667 | | | | | | |
| aa28S | S20 | 14a,17a-20S-Methylcholestane | U | 0.0667 | | | | | | |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | U | 0.0667 | | | | | | |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethylcholestane | U | 0.0667 | | | | | | |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethylcholestane | U | 0.0667 | | | | | | |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | U | 0.0667 | | | | | | |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | U | 0.0667 | | | | | | |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | U | 0.0667 | | | | | | |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | U | 0.0667 | | | | | | |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethylcholestane | U | 0.0667 | | | | | | |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethylcholestane | U | 0.0667 | | | | | | |
| RC26/SC27TA | RC26/SC27TA | C26,20R +C27,20S-triaromatic steroid | U | 0.0667 | | | | | | |
| SC28TA | RC28TA | C28,20S-triaromatic steroid | U | 0.0667 | | | | | | |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | U | 0.0667 | | | | | | |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | U | 0.0667 | | | | | | |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | U | 0.0667 | | | | | | |

Surrogates (% Recovery)
 Naphthalene-d8 84
 Phenanthrene-d10 89
 Benzo[a]pyrene-d12 76
 5B(H)Cholane NA



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------|
| Client ID | Alaska North Slope |
| Lab ID | Crude |
| Matrix | SS030312ANS02 |
| Reference Method | Oil |
| Batch ID | Modified 8270C |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/24/2012 |
| Sample Size (wet) | 0.0521 |
| % Solid | 100.00 |
| File ID | A809751.D |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 1.92 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---|--------|------|-------|-------------|-------------|-------------|
| 2 | D0 | cis/trans-Decalin | 540 | 1.92 | 106 | 508.70 | 65 | 135 |
| 2 | D1 | C1-Decalins | 812 | 1.92 | 107 | 761.10 | 65 | 135 |
| 2 | D2 | C2-Decalins | 720 | 1.92 | 112 | 641.90 | 65 | 135 |
| 2 | D3 | C3-Decalins | 360 | 1.92 | 106 | 338.20 | 65 | 135 |
| 2 | D4 | C4-Decalins | 360 | 1.92 | 119 | 300.90 | 65 | 135 |
| 2 | BT0 | Benzo(b)thiophene | 6.08 | 1.92 | 115 | 5.30 | 65 | 135 |
| 2 | BT1 | C1-Benzo(b)thiophenes | 32.5 | 1.92 | 109 | 29.80 | 65 | 135 |
| 2 | BT2 | C2-Benzo(b)thiophenes | 55.3 | 1.92 | 110 | 50.10 | 65 | 135 |
| 2 | BT3 | C3-Benzo(b)thiophenes | 110 | 1.92 | 106 | 103.30 | 65 | 135 |
| 2 | BT4 | C4-Benzo(b)thiophenes | 103 | 1.92 | 122 | 84.90 | 65 | 135 |
| 2 | N0 | Naphthalene | 590 | 1.92 | 102 | 577.60 | 65 | 135 |
| 2 | N1 | C1-Naphthalenes | 1290 | 1.92 | 104 | 1242.00 | 65 | 135 |
| 2 | N2 | C2-Naphthalenes | 1570 | 1.92 | 107 | 1472.00 | 65 | 135 |
| 2 | N3 | C3-Naphthalenes | 1150 | 1.92 | 109 | 1053.40 | 65 | 135 |
| 2 | N4 | C4-Naphthalenes | 636 | 1.92 | 115 | 552.70 | 65 | 135 |
| 2 | B | Biphenyl | 154 | 1.92 | 101 | 152.50 | 65 | 135 |
| 3 | DF | Dibenzofuran | 55.2 | 1.92 | 103 | 53.50 | 65 | 135 |
| 3 | AY | Acenaphthylene | 6.77 | 1.92 | 95 | 7.10 | 65 | 135 |
| 3 | AE | Acenaphthene | 20.2 | 1.92 | 108 | 18.70 | 65 | 135 |
| 3 | F0 | Fluorene | 80.5 | 1.92 | 101 | 79.40 | 65 | 135 |
| 3 | F1 | C1-Fluorenes | 184 | 1.92 | 105 | 175.10 | 65 | 135 |
| 3 | F2 | C2-Fluorenes | 298 | 1.92 | 116 | 256.50 | 65 | 135 |
| 3 | F3 | C3-Fluorenes | 281 | 1.92 | 118 | 238.70 | 65 | 135 |
| 3 | A0 | Anthracene | U | 1.92 | | | | |
| 3 | P0 | Phenanthrene | 236 | 1.92 | 106 | 222.00 | 65 | 135 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | 495 | 1.92 | 112 | 440.50 | 65 | 135 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | 541 | 1.92 | 116 | 464.90 | 65 | 135 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | 375 | 1.92 | 122 | 307.70 | 65 | 135 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | 154 | 1.92 | 125 | 122.90 | 65 | 135 |
| 3 | RET | Retene | U | 1.92 | | | | |
| 3 | DBT0 | Dibenzothiophene | 149 | 1.92 | 102 | 146.10 | 65 | 135 |
| 3 | DBT1 | C1-Dibenzothiophenes | 311 | 1.92 | 104 | 299.00 | 65 | 135 |
| 3 | DBT2 | C2-Dibenzothiophenes | 428 | 1.92 | 109 | 392.90 | 65 | 135 |
| 3 | DBT3 | C3-Dibenzothiophenes | 370 | 1.92 | 106 | 350.50 | 65 | 135 |
| 3 | DBT4 | C4-Dibenzothiophenes | 203 | 1.92 | 108 | 189.20 | 65 | 135 |
| 4 | BF | Benzo(b)fluorene | 7.20 | 1.92 | | | | |
| 4 | FL0 | Fluoranthene | 4.32 | 1.92 | 105 | 4.10 | 65 | 135 |
| 4 | PY0 | Pyrene | 14.9 | 1.92 | 112 | 13.30 | 65 | 135 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | 71.4 | 1.92 | 108 | 66.10 | 65 | 135 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | 111 | 1.92 | 110 | 100.90 | 65 | 135 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | 135 | 1.92 | 112 | 120.80 | 65 | 135 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | 110 | 1.92 | 105 | 105.60 | 65 | 135 |
| 4 | NBT0 | Naphthobenzothiophenes | 47.0 | 1.92 | 104 | 45.10 | 65 | 135 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | 120 | 1.92 | 97 | 124.10 | 65 | 135 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | 165 | 1.92 | 98 | 168.90 | 65 | 135 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | 131 | 1.92 | 96 | 136.10 | 65 | 135 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | 88.4 | 1.92 | 94 | 93.90 | 65 | 135 |
| 4 | BA0 | Benz[a]anthracene | 2.23 | 1.92 | 112 | 2.00 | 65 | 135 |
| 4 | C0 | Chrysene/Triphenylene | 36.9 | 1.92 | 99 | 37.40 | 65 | 135 |
| 4 | BC1 | C1-Chrysenes | 66.4 | 1.92 | 104 | 63.90 | 65 | 135 |
| 4 | BC2 | C2-Chrysenes | 87.5 | 1.92 | 101 | 86.60 | 65 | 135 |
| 4 | BC3 | C3-Chrysenes | 99.5 | 1.92 | 100 | 99.60 | 65 | 135 |
| 4 | BC4 | C4-Chrysenes | 58.7 | 1.92 | 94 | 62.20 | 65 | 135 |
| 5 | BBF | Benzo[b]fluoranthene | 5.07 | 1.92 | 96 | 5.30 | 65 | 135 |
| 5 | BJKF | Benzo[k]fluoranthene/Benzo[j]fluoranthene | U | 1.92 | | | | |
| 5 | BAF | Benzo[a]fluoranthene | U | 1.92 | | | | |
| 5 | BEP | Benzo[e]pyrene | 9.57 | 1.92 | 100 | 9.60 | 65 | 135 |
| 5 | BAP | Benzo[a]pyrene | 2.18 | 1.92 | 109 | 2.00 | 65 | 135 |
| 5 | PER | Perylene | 2.88 | 1.92 | 107 | 2.70 | 65 | 135 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 0.666 | J | 1.92 | | | |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 0.866 | J | 1.92 | | | |
| 6 | GHI | Benzo[g,h,i]perylene | 2.97 | 1.92 | 96 | 3.10 | 65 | 135 |
| 6 | CAR | Carbazole | 7.84 | 1.92 | 121 | 6.50 | 65 | 135 |
| 3 | 4MDT | 4-Methylbenzothiophene | 148 | 1.92 | 103 | 143.50 | 65 | 135 |
| 3 | 2MDT | 2/3-Methylbenzothiophene | 103 | 1.92 | 100 | 103.10 | 65 | 135 |
| 3 | 1MDT | 1-Methylbenzothiophene | 48.4 | 1.92 | 104 | 46.80 | 65 | 135 |
| 3 | 3MP | 3-Methylphenanthrene | 101 | 1.92 | 110 | 91.80 | 65 | 135 |
| 3 | 2MP | 2/4-Methylphenanthrene | 114 | 1.92 | 115 | 99.60 | 65 | 135 |
| 3 | 2MA | 2-Methylanthracene | 4.02 | 1.92 | 130 | 3.10 | 65 | 135 |
| 3 | 9MP | 9-Methylphenanthrene | 161 | 1.92 | 110 | 145.90 | 65 | 135 |
| 3 | 1MP | 1-Methylphenanthrene | 113 | 1.92 | 116 | 97.60 | 65 | 135 |



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|--------------------|----------------|
| Alaska North Slope | Crude |
| Lab ID | SS030312ANS02 |
| Matrix | Oil |
| Reference Method | Modified 8270C |
| Batch ID | N/A |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 02/24/2012 |
| Sample Size (wet) | 0.0521 |
| % Solid | 100.00 |
| File ID | A809751.D |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 1.92 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------------|-------------|---|--------|------|-------|-------------|-------------|-------------|
| t23 | T4 | C23 Tricyclic Terpene | 64.5 | 1.92 | 96 | 67.10 | 65 | 135 |
| t24 | T5 | C24 Tricyclic Terpene | 41.4 | 1.92 | 98 | 42.30 | 65 | 135 |
| t25 | T6 | C25 Tricyclic Terpene | 40.3 | 1.92 | 99 | 40.90 | 65 | 135 |
| te24 | T6a | C24 Tetracyclic Terpene | 13.7 | 1.92 | 96 | 14.30 | 65 | 135 |
| t26S | T6b | C26 Tricyclic Terpene-22S | 15.5 | 1.92 | 91 | 17.00 | 65 | 135 |
| t26R | T6c | C26 Tricyclic Terpene-22R | 14.5 | 1.92 | 97 | 15.00 | 65 | 135 |
| t28S | T7 | C28 Tricyclic Terpene-22S | 15.5 | 1.92 | 95 | 16.30 | 65 | 135 |
| t28R | T8 | C28 Tricyclic Terpene-22R | 17.0 | 1.92 | 96 | 17.70 | 65 | 135 |
| t29S | T9 | C29 Tricyclic Terpene-22S | 21.0 | 1.92 | 101 | 20.70 | 65 | 135 |
| t29R | T10 | C29 Tricyclic Terpene-22R | 21.3 | 1.92 | 101 | 21.10 | 65 | 135 |
| Ts | T11 | 18a-22,29,30-Trisnorhopane-TS | 29.9 | 1.92 | 98 | 30.60 | 65 | 135 |
| t30S | T11a | C30 Tricyclic Terpene-22S | 18.7 | 1.92 | 118 | 15.80 | 65 | 135 |
| t30R | T11b | C30 Tricyclic Terpene-22R | 17.3 | 1.92 | 109 | 15.80 | 65 | 135 |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | 35.8 | 1.92 | 98 | 36.70 | 65 | 135 |
| BNH | T14a | 17a/b,21b/a 28,30-Bisnorhopane | 6.53 | 1.92 | 91 | 7.20 | 65 | 135 |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | 8.25 | 1.92 | 96 | 8.60 | 65 | 135 |
| H29 | T15 | 30-Norhopane | 94.9 | 1.92 | 97 | 97.50 | 65 | 135 |
| C29Ts | T16 | 18a(H)-30-Norneohopane-C29Ts | 24.0 | 1.92 | 98 | 24.40 | 65 | 135 |
| X | X | 17a(H)-Diahopane | 14.5 | 1.92 | 101 | 14.30 | 65 | 135 |
| M29 | T17 | 30-Normoretane | 10.4 | 1.92 | 91 | 11.50 | 65 | 135 |
| OL | T18 | 18a(H)&18b(H)-Oleananes | 3.14 | 1.92 | | | | |
| H30 | T19 | Hopane | 161 | 1.92 | 94 | 171.10 | 65 | 135 |
| M30 | T20 | Moretane | 17.4 | 1.92 | 105 | 16.60 | 65 | 135 |
| H31S | T21 | 30-Homohopane-22S | 75.1 | 1.92 | 102 | 73.80 | 65 | 135 |
| H31R | T22 | 30-Homohopane-22R | 63.0 | 1.92 | 99 | 63.40 | 65 | 135 |
| H32S | T26 | 30,31-Bishomohopane-22S | 53.0 | 1.92 | 101 | 52.50 | 65 | 135 |
| H32R | T27 | 30,31-Bishomohopane-22R | 39.0 | 1.92 | 101 | 38.40 | 65 | 135 |
| H33R | T30 | 30,31-Trishomohopane-22S | 39.7 | 1.92 | 97 | 41.10 | 65 | 135 |
| H33S | T31 | 30,31-Trishomohopane-22R | 25.7 | 1.92 | 94 | 27.40 | 65 | 135 |
| H34R | T32 | Tetrakishomohopane-22S | 28.0 | 1.92 | 93 | 30.00 | 65 | 135 |
| H34S | T33 | Tetrakishomohopane-22R | 19.5 | 1.92 | 94 | 20.70 | 65 | 135 |
| H35S | T34 | Pentakishomohopane-22S | 30.2 | 1.92 | 100 | 30.20 | 65 | 135 |
| H35R | T35 | Pentakishomohopane-22R | 23.6 | 1.92 | 102 | 23.20 | 65 | 135 |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | 45.1 | 1.92 | 92 | 49.20 | 65 | 135 |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | 27.9 | 1.92 | 110 | 25.30 | 65 | 135 |
| d28S | S8 | 13b,17a-20S-Methyldiacholestane | 24.0 | 1.92 | 103 | 23.30 | 65 | 135 |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12) | 64.4 | 1.92 | 100 | 64.20 | 65 | 135 |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17) | 76.3 | 1.92 | 101 | 75.50 | 65 | 135 |
| d29R | S18 | Unknown Sterane (S18) | 20.8 | 1.92 | 100 | 20.70 | 65 | 135 |
| d29S | S19 | 13a,17b-20S-Ethyldiacholestane | 3.52 | 1.92 | 84 | 4.20 | 65 | 135 |
| aa28S | S20 | 14a,17a-20S-Methylcholestane | 37.5 | 1.92 | 102 | 36.70 | 65 | 135 |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | 31.0 | 1.92 | 94 | 33.00 | 65 | 135 |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethylcholestane | 52.9 | 1.92 | 102 | 51.90 | 65 | 135 |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethylcholestane | 40.0 | 1.92 | 101 | 39.70 | 65 | 135 |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | 39.0 | 1.92 | 97 | 40.10 | 65 | 135 |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | 40.6 | 1.92 | 100 | 40.70 | 65 | 135 |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | 42.0 | 1.92 | 94 | 44.80 | 65 | 135 |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | 52.9 | 1.92 | 98 | 54.00 | 65 | 135 |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethylcholestane | 58.4 | 1.92 | 99 | 59.20 | 65 | 135 |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethylcholestane | 36.7 | 1.92 | 90 | 40.60 | 65 | 135 |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | 265 | 1.92 | 87 | 304.20 | 65 | 135 |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | 172 | 1.92 | 90 | 191.80 | 65 | 135 |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | 166 | 1.92 | 89 | 186.40 | 65 | 135 |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | 138 | 1.92 | 87 | 158.30 | 65 | 135 |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | 14.0 | 1.92 | | | | |



Project Name: GZA-642 Allens Ave
 Project Number:

| | | |
|-------------------|----------------|----------------|
| Client ID | CB#1 | CB#2 |
| Lab ID | 1203045-01 | 1203045-02 |
| Matrix | Solid | Solid |
| Reference Method | Modified 8270C | Modified 8270C |
| Batch ID | SS032612B05 | SS032612B05 |
| Date Collected | 03/07/2012 | 03/07/2012 |
| Date Received | 03/09/2012 | 03/09/2012 |
| Date Prepped | 03/12/2012 | 03/12/2012 |
| Date Analyzed | 03/27/2012 | 03/27/2012 |
| Sample Size (wet) | 0.5176 | 0.0448 |
| % Solid | 100.00 | 100.00 |
| File ID | a810166.D | a810167.D |
| Units | mg/Kg | mg/Kg |
| Final Volume | 100 | 11.11 |
| Dilution | 1 | 1 |
| Reporting Limit | 1.93 | 2.48 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL |
|-------|--------|---|--------|------|--------|--------|
| 2 | D0 | cis/trans-Decalin | 13.4 | 1.93 | 37.0 | 2.48 |
| 2 | D1 | C1-Decalins | 79.5 | 1.93 | 202 | 2.48 |
| 2 | D2 | C2-Decalins | 418 | 1.93 | 389 | 2.48 |
| 2 | D3 | C3-Decalins | 719 | 1.93 | 320 | 2.48 |
| 2 | D4 | C4-Decalins | 1360 | 1.93 | 479 | 2.48 |
| 2 | BT0 | Benzo(b)thiophene | 2.40 | 1.93 | 1.20 | J 2.48 |
| 2 | BT1 | C1-Benzo(b)thiophenes | 141 | 1.93 | 43.6 | 2.48 |
| 2 | BT2 | C2-Benzo(b)thiophenes | 994 | 1.93 | 146 | 2.48 |
| 2 | BT3 | C3-Benzo(b)thiophenes | 2100 | 1.93 | 363 | 2.48 |
| 2 | BT4 | C4-Benzo(b)thiophenes | 1800 | 1.93 | 350 | 2.48 |
| 2 | N0 | Naphthalene | 27.0 | 1.93 | 17.1 | 2.48 |
| 2 | N1 | C1-Naphthalenes | 297 | 1.93 | 58.2 | 2.48 |
| 2 | N2 | C2-Naphthalenes | 2260 | 1.93 | 276 | 2.48 |
| 2 | N3 | C3-Naphthalenes | 2710 | 1.93 | 529 | 2.48 |
| 2 | N4 | C4-Naphthalenes | 1610 | 1.93 | 424 | 2.48 |
| 2 | B | Biphenyl | 3.54 | 1.93 | 1.96 | J 2.48 |
| 3 | DF | Dibenzofuran | 126 | 1.93 | 18.4 | 2.48 |
| 3 | AY | Acenaphthylene | 56.5 | 1.93 | 31.6 | 2.48 |
| 3 | AE | Acenaphthene | 137 | 1.93 | 30.9 | 2.48 |
| 3 | F0 | Fluorene | 259 | 1.93 | 51.2 | 2.48 |
| 3 | F1 | C1-Fluorenes | 277 | 1.93 | 70.1 | 2.48 |
| 3 | F2 | C2-Fluorenes | 399 | 1.93 | 132 | 2.48 |
| 3 | F3 | C3-Fluorenes | 352 | 1.93 | 155 | 2.48 |
| 3 | A0 | Anthracene | 139 | 1.93 | 45.6 | 2.48 |
| 3 | P0 | Phenanthrene | 591 | 1.93 | 198 | 2.48 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | 531 | 1.93 | 186 | 2.48 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | 465 | 1.93 | 219 | 2.48 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | 260 | 1.93 | 139 | 2.48 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | 128 | 1.93 | 71.4 | 2.48 |
| 3 | RET | Retene | 80.1 | 1.93 | | U 2.48 |
| 3 | DBT0 | Dibenzothiophene | 229 | 1.93 | 47.9 | 2.48 |
| 3 | DBT1 | C1-Dibenzothiophenes | 620 | 1.93 | 170 | 2.48 |
| 3 | DBT2 | C2-Dibenzothiophenes | 886 | 1.93 | 299 | 2.48 |
| 3 | DBT3 | C3-Dibenzothiophenes | 745 | 1.93 | 330 | 2.48 |
| 3 | DBT4 | C4-Dibenzothiophenes | 428 | 1.93 | 224 | 2.48 |
| 4 | BF | Benzo(b)fluorene | 71.0 | 1.93 | 32.0 | 2.48 |
| 4 | FL0 | Fluoranthene | 346 | 1.93 | 270 | 2.48 |
| 4 | PY0 | Pyrene | 324 | 1.93 | 253 | 2.48 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | 305 | 1.93 | 174 | 2.48 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | 169 | 1.93 | 120 | 2.48 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | 120 | 1.93 | 84.5 | 2.48 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | 81.4 | 1.93 | 67.3 | 2.48 |
| 4 | NBT0 | Naphthobenzothiophenes | 51.6 | 1.93 | 41.7 | 2.48 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | 76.5 | 1.93 | 65.2 | 2.48 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | 111 | 1.93 | 107 | 2.48 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | 110 | 1.93 | 107 | 2.48 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | 82.0 | 1.93 | 91.4 | 2.48 |
| 4 | BA0 | Benz[a]anthracene | 132 | 1.93 | 103 | 2.48 |
| 4 | C0 | Chrysene/Triphenylene | 123 | 1.93 | 124 | 2.48 |
| 4 | BC1 | C1-Chrysenes | 91.0 | 1.93 | 67.9 | 2.48 |
| 4 | BC2 | C2-Chrysenes | 92.0 | 1.93 | 53.8 | 2.48 |
| 4 | BC3 | C3-Chrysenes | 82.6 | 1.93 | 57.6 | 2.48 |
| 4 | BC4 | C4-Chrysenes | 53.6 | 1.93 | 41.2 | 2.48 |
| 5 | BBF | Benzo[b]fluoranthene | 89.6 | 1.93 | 99.4 | 2.48 |
| 5 | BJKF | Benzo[k]fluoranthene/Benzo[k]fluoranthene | 84.9 | 1.93 | 97.3 | 2.48 |
| 5 | BAF | Benzo[a]fluoranthene | 27.8 | 1.93 | 20.0 | 2.48 |
| 5 | BEP | Benzo[e]pyrene | 71.9 | 1.93 | 83.9 | 2.48 |
| 5 | BAP | Benzo[a]pyrene | 95.9 | 1.93 | 93.4 | 2.48 |
| 5 | PER | Perylene | 14.4 | 1.93 | 19.8 | 2.48 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 45.4 | 1.93 | 62.9 | 2.48 |
| 6 | DA | Dibenzo[a,h]anthracene/Dibenz[ac]anthracene | 15.1 | 1.93 | 16.8 | 2.48 |
| 6 | GHI | Benzo[g,h,i]perylene | 45.1 | 1.93 | 62.8 | 2.48 |
| | CAR | Carbazole | 14.2 | 1.93 | 20.4 | 2.48 |
| 3 | 4MDT | 4-Methylbenzothiophene | 249 | 1.93 | 64.1 | 2.48 |
| 3 | 2MDT | 2/3-Methylbenzothiophene | 207 | 1.93 | 57.8 | 2.48 |
| 3 | 1MDT | 1-Methylbenzothiophene | 122 | 1.93 | 34.0 | 2.48 |
| 3 | 3MP | 3-Methylphenanthrene | 116 | 1.93 | 42.7 | 2.48 |
| 3 | 2MP | 2/4-Methylphenanthrene | 140 | 1.93 | 48.2 | 2.48 |
| 3 | 2MA | 2-Methylanthracene | 30.4 | 1.93 | 11.9 | 2.48 |
| 3 | 9MP | 9-Methylphenanthrene | 141 | 1.93 | 46.0 | 2.48 |
| 3 | 1MP | 1-Methylphenanthrene | 87.4 | 1.93 | 32.9 | 2.48 |



Project Name: GZA-642 Allens Ave
 Project Number:

| | | |
|-------------------|----------------|----------------|
| Client ID | CB#1 | CB#2 |
| Lab ID | 1203045-01 | 1203045-02 |
| Matrix | Solid | Solid |
| Reference Method | Modified 8270C | Modified 8270C |
| Batch ID | SS032612B05 | SS032612B05 |
| Date Collected | 03/07/2012 | 03/07/2012 |
| Date Received | 03/09/2012 | 03/09/2012 |
| Date Prepped | 03/12/2012 | 03/12/2012 |
| Date Analyzed | 03/27/2012 | 03/27/2012 |
| Sample Size (wet) | 0.5176 | 0.0448 |
| % Solid | 100.00 | 100.00 |
| File ID | a810166.D | a810167.D |
| Units | mg/Kg | mg/Kg |
| Final Volume | 100 | 11.11 |
| Dilution | 1 | 1 |
| Reporting Limit | 1.93 | 2.48 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL |
|-------------|-------------|---|--------|------|--------|------|
| t23 | T4 | C23 Tricyclic Terpene | 52.5 | 1.93 | 29.2 | 2.48 |
| t24 | T5 | C24 Tricyclic Terpene | 17.0 | 1.93 | 11.0 | 2.48 |
| t25 | T6 | C25 Tricyclic Terpene | 15.0 | 1.93 | 12.6 | 2.48 |
| te24 | T6a | C24 Tetracyclic Terpene | 14.4 | 1.93 | 12.2 | 2.48 |
| t26S | T6b | C26 Tricyclic Terpene-22S | 5.25 | 1.93 | 3.89 | 2.48 |
| t26R | T6c | C26 Tricyclic Terpene-22R | 5.78 | 1.93 | 4.01 | 2.48 |
| t28S | T7 | C28 Tricyclic Terpene-22S | 4.72 | 1.93 | 3.89 | 2.48 |
| t28R | T8 | C28 Tricyclic Terpene-22R | 5.34 | 1.93 | 4.69 | 2.48 |
| t29S | T9 | C29 Tricyclic Terpene-22S | 7.02 | 1.93 | 6.27 | 2.48 |
| t29R | T10 | C29 Tricyclic Terpene-22R | 6.08 | 1.93 | 5.14 | 2.48 |
| Ts | T11 | 18a-22,29,30-Trisnormehopane-TS | 29.9 | 1.93 | 21.3 | 2.48 |
| t30S | T11a | C30 Tricyclic Terpene-22S | 5.84 | 1.93 | 6.81 | 2.48 |
| t30R | T11b | C30 Tricyclic Terpene-22R | 6.12 | 1.93 | 7.90 | 2.48 |
| Tm | T12 | 17a(H)-22,29,30-Trisnorhopane-TM | 49.8 | 1.93 | 40.6 | 2.48 |
| BNH | T14a | 17a/b,21b/a 28,30-Bisnorhopane | 14.1 | 1.93 | 12.6 | 2.48 |
| 25N | T14b | 17a(H),21b(H)-25-Norhopane | 3.66 | 1.93 | 3.72 | 2.48 |
| H29 | T15 | 30-Norhopane | 160 | 1.93 | 138 | 2.48 |
| C29Ts | T16 | 18a(H)-30-Norhopane-C29Ts | 35.4 | 1.93 | 23.0 | 2.48 |
| X | X | 17a(H)-Diahopane | 7.10 | 1.93 | 6.18 | 2.48 |
| M29 | T17 | 30-Normoretane | 25.5 | 1.93 | 15.8 | 2.48 |
| OL | T18 | 18a(H)&18b(H)-Oleananes | 16.0 | 1.93 | 6.40 | 2.48 |
| H30 | T19 | Hopane | 212 | 1.93 | 151 | 2.48 |
| M30 | T20 | Moretane | 29.9 | 1.93 | 16.7 | 2.48 |
| H31S | T21 | 30-Homohopane-22S | 75.8 | 1.93 | 74.4 | 2.48 |
| H31R | T22 | 30-Homohopane-22R | 60.2 | 1.93 | 58.6 | 2.48 |
| H32S | T26 | 30,31-Bishomohopane-22S | 46.2 | 1.93 | 45.8 | 2.48 |
| H32R | T27 | 30,31-Bishomohopane-22R | 38.6 | 1.93 | 34.9 | 2.48 |
| H33R | T30 | 30,31-Trishomohopane-22S | 27.2 | 1.93 | 31.8 | 2.48 |
| H33S | T31 | 30,31-Trishomohopane-22R | 20.0 | 1.93 | 19.7 | 2.48 |
| H34R | T32 | Tetrakishomohopane-22S | 20.0 | 1.93 | 23.1 | 2.48 |
| H34S | T33 | Tetrakishomohopane-22R | 11.0 | 1.93 | 15.3 | 2.48 |
| H35S | T34 | Pentakishomohopane-22S | 18.2 | 1.93 | 25.3 | 2.48 |
| H35R | T35 | Pentakishomohopane-22R | 11.9 | 1.93 | 16.0 | 2.48 |
| d27S | S4 | 13b(H),17a(H)-20S-Diacholestane | 17.2 | 1.93 | 14.4 | 2.48 |
| d27R | S5 | 13b(H),17a(H)-20R-Diacholestane | 9.67 | 1.93 | 7.96 | 2.48 |
| d28S | S8 | 13b,17a-20S-Methyldiacholestane | 12.7 | 1.93 | 9.22 | 2.48 |
| aa27S | S12 | 14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12) | 40.4 | 1.93 | 30.2 | 2.48 |
| aa27R | S17 | 14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17) | 50.7 | 1.93 | 40.2 | 2.48 |
| d29R | S18 | Unknown Sterane (S18) | 6.41 | 1.93 | 4.06 | 2.48 |
| d29S | S19 | 13a,17b-20S-Ethyldiacholestane | 4.62 | 1.93 | 2.60 | 2.48 |
| aa28S | S20 | 14a,17a-20S-Methylcholestane | 23.3 | 1.93 | 17.9 | 2.48 |
| aa28R | S24 | 14a,17a-20R-Methylcholestane | 23.4 | 1.93 | 17.3 | 2.48 |
| aa29S | S25 | 14a(H),17a(H)-20S-Ethylcholestane | 36.7 | 1.93 | 30.1 | 2.48 |
| aa29R | S28 | 14a(H),17a(H)-20R-Ethylcholestane | 32.3 | 1.93 | 29.6 | 2.48 |
| bb27R | S14 | 14b(H),17b(H)-20R-Cholestane | 39.8 | 1.93 | 29.4 | 2.48 |
| bb27S | S15 | 14b(H),17b(H)-20S-Cholestane | 37.7 | 1.93 | 29.0 | 2.48 |
| bb28R | S22 | 14b,17b-20R-Methylcholestane | 34.9 | 1.93 | 28.3 | 2.48 |
| bb28S | S23 | 14b,17b-20S-Methylcholestane | 37.9 | 1.93 | 35.0 | 2.48 |
| bb29R | S26 | 14b(H),17b(H)-20R-Ethylcholestane | 52.6 | 1.93 | 47.5 | 2.48 |
| bb29S | S27 | 14b(H),17b(H)-20S-Ethylcholestane | 34.2 | 1.93 | 27.4 | 2.48 |
| RC26/SC27TA | RC26/SC27TA | C26,20R- +C27,20S- triaromatic steroid | 147 | 1.93 | 123 | 2.48 |
| SC28TA | SC28TA | C28,20S-triaromatic steroid | 102 | 1.93 | 91.8 | 2.48 |
| RC27TA | RC27TA | C27,20R-triaromatic steroid | 97.4 | 1.93 | 87.5 | 2.48 |
| RC28TA | RC28TA | C28,20R-triaromatic steroid | 77.6 | 1.93 | 69.1 | 2.48 |
| T22A | T22A | T22a-Gammacerane/C32-diahopane | 17.3 | 1.93 | 16.8 | 2.48 |

| | | |
|-------------------------|-----|-----|
| Surrogates (% Recovery) | | |
| Naphthalene-d8 | 89 | 91 |
| Phenanthrene-d10 | 117 | 100 |
| Benzo[a]pyrene-d12 | 82 | 83 |
| 5B(H)Cholane | NA | NA |



U: The analyte was analyzed for but not detected at the sample specific level reported
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
#: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
#: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDI
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.

February 26, 2013

Ms. Margaret Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, Rhode Island 02909

Subject: Chemical Fingerprinting at 642 Allens Avenue, Providence, Rhode Island

Dear Ms. Kilpatrick,

NewFields is pleased to provide you with this letter report, summarizing the results of the analysis conducted on one groundwater sample collected from an excavation site at National Grid's facility located at 642 Allens Avenue in Providence, Rhode Island. The objective of this study was to determine the composition of the sample.

Sampling and Analysis

One groundwater sample was collected on January 29, 2013 and was packed on ice and shipped the same day by courier to NewFields' alliance laboratory, Alpha Analytical Laboratory (Alpha) for chemical fingerprinting analysis. The sample was received intact and in good condition. Upon receipt, the sample was logged into Alpha's laboratory information management system (LIMS) and given a unique laboratory identification. The sample was stored in a limited access refrigerator at 4°C until processed by the laboratory staff for chemical fingerprinting analysis. Summary information of the sample collected is provided below. Chain-of-custody documentation is provided in Attachment 1.

| Client ID | Lab ID | Matrix | Date Collected | Date Received |
|---------------|------------|--------|----------------|---------------|
| PRODUCT-12913 | 1301009-01 | Water | 29-Jan-13 | 29-Jan-13 |

The product samples were analyzed using a series of methods designed specifically for the forensic analysis of petroleum¹:

- (1) *Total Petroleum Hydrocarbons (TPH) and Fingerprinting*: a modified EPA Method 8015B gas chromatography method was used to determine the total petroleum hydrocarbon (TPH) concentration (C₈ – C₄₄). A high resolution gas chromatogram produced by this method provides a detailed "fingerprint" of the hydrocarbons that compose samples. This analysis allowed for the characterization of the general boiling range(s) and type(s) of petroleum or other hydrocarbons present in the sample, as well as the degree(s) of weathering a fugitive product has undergone in the
- (2) *PIANO Quantification and Fingerprinting*: a modified EPA Method 8260B was used for quantification of 88 volatile hydrocarbons contained in the five compound classes, paraffins, isoparaffins, aromatics, naphthenes, and olefins (PIANO) by purge-and-trap gas chromatography and mass spectrometer (GC/MS) operated in a full scan mode. In

¹ Douglas, G.D., Emsbo-Mattingly, S.D., Stout, S.A., Uhler, A.D., and McCarthy, K.J. (2007) Chemical fingerprinting of hydrocarbons and polychlorinated biphenyls. In: *Introduction to Environmental Forensics, 2nd Ed.*, B. Murphy and R. Morrison, Eds., Academic Press, New York, pp.317-459.

addition, various oxygenated compounds commonly found in oxygenated and reformulated gasolines are targeted, namely, *tert*-butyl alcohol (TBA), methyl-*tert*-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl-*tert*-butyl ether (ETBE), and *tert*-amyl-methyl ether (TAME). Lead scavengers historically used (1,2-dichloroethane and 1,2-dibromoethane) and various volatile sulfur species are also targeted. A full list of the volatile hydrocarbons measured is provided in Table 1.

Additionally, the sample was analyzed by GC/MS operating in the full scan mode to tentatively identify unknown compounds.

Results and Discussion

The complete Alpha Environmental Testing Report (ETR) including all sample preparation data, instrument calibrations, QC data and chromatograms is maintained on file by NewFields (ETR 1301009). A data summary containing pertinent gas chromatograms and tabulated results of all chemical analyses and quality control results may be found as Attachment 1 to this letter.

All analyses were conducted following established laboratory data quality objectives (DQOs). Appropriate laboratory quality control (QC) samples were processed along with the samples. The QC samples included laboratory method blank (B), laboratory control samples (LCS/LCSD), sample duplicate (D), and a reference materials oil. Resulting data underwent several levels of review. NewFields performed an independent review of the data generated by Alpha Laboratory, to ensure that data quality objectives were satisfied, and that the results were traceable to the raw data. NewFields also reviewed the data for compliance with the laboratory's documented procedures and established laboratory quality objectives. The data were found to be accurate and traceable, and met laboratory established method data quality objectives.

Compositional Features.

The gas chromatogram, or "fingerprint", is the instrument output that defines the distribution of the petroleum hydrocarbons in each sample usually from most volatile to least volatile². The peaks that appear in the chromatogram represent discrete compounds, the height of which is proportional to the abundance of those compounds in the petroleum. Every petroleum product has its own unique distribution of peaks (individual hydrocarbons). It is this fundamental gas chromatographic feature – the GC "fingerprint" – that allows the environmental chemist to identify and distinguish one petroleum product from another.

The GC/FID fingerprint for PRODUCT-12913 is shown in Figure 1. The GC fingerprint shows that this sample is composed mostly of a heavy middle distillate (e.g., cutting oil, light lubricating oil, or gear oil). The dominant carbon range is from C14 to C21. The dominant resolved peaks present in this range include normal alkanes. The dissolved phase also shows evidence of low levels pyrogenic PAHs, which may be indicative of coal tar residue. Refer to Figure 1 for the compound identifications.

Please do not hesitate to contact me if you have any questions regarding this letter.

² The elution order (e.g. retention time) of peaks on the chromatogram is a function of volatility with the most volatile compounds eluting early in the GC run (e.g., n-C₁₀), and the less volatile hydrocarbons eluting later in the GC run (e.g., n-C₃₀).

Sincerely,

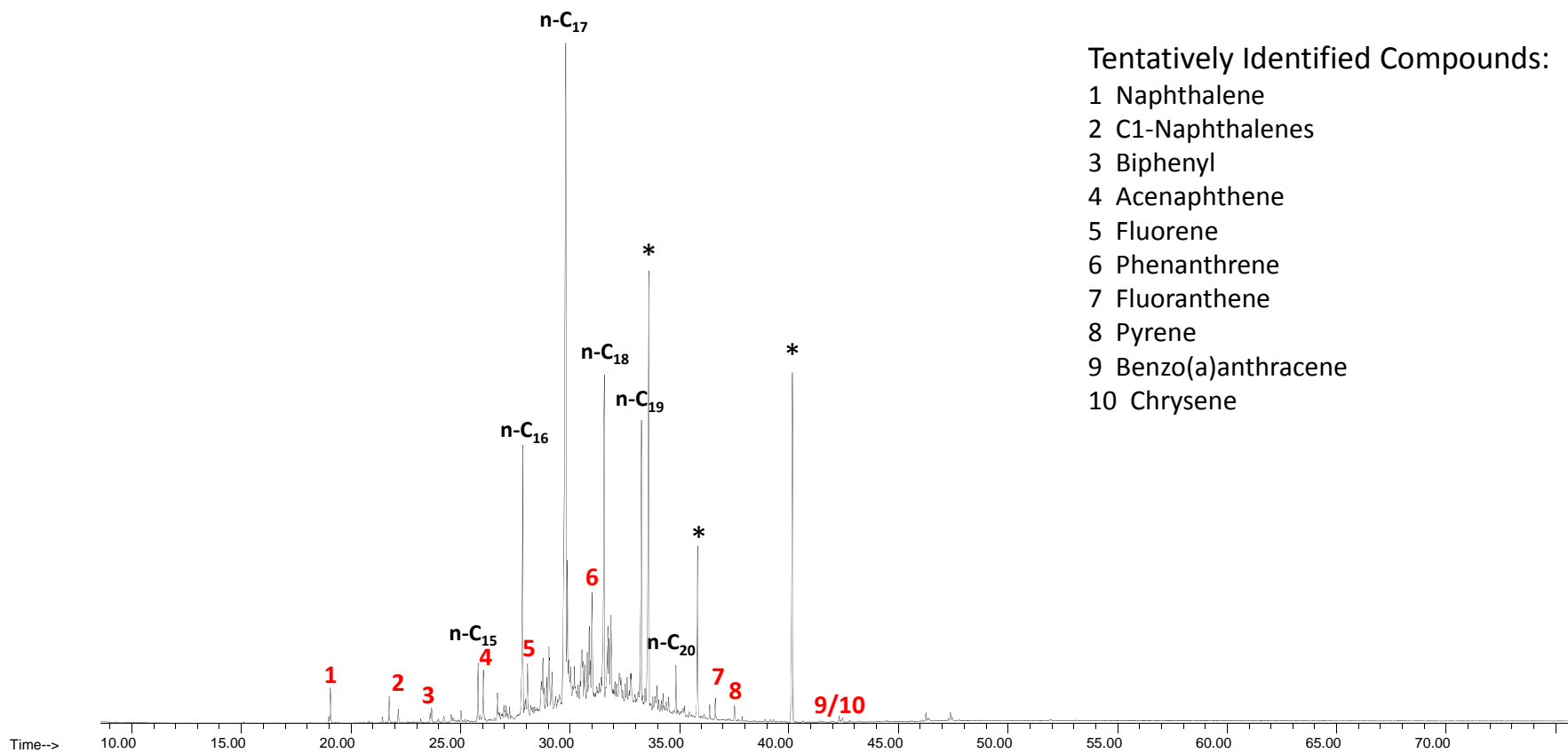
A handwritten signature in black ink, appearing to read "Kerylynn Krahforst". The signature is written in a cursive, flowing style.

Kerylynn Krahforst
Staff Scientist

Attachment 1: Data Deliverable

Table 1. Volatile Hydrocarbon Compounds Measured in PRODUCT-12913

| Abbrev | Analytes | Abbrev | Analytes |
|--------|----------------------------|---------|-----------------------------|
| IP | Isopentane | C8 | Octane |
| 1P | 1-Pentene | 12DBE | 1,2-Dibromoethane |
| 2M1B | 2-Methyl-1-butene | EB | Ethylbenzene |
| C5 | Pentane | 2ETHIO | 2-Ethylthiophene |
| T2P | 2-Pentene (trans) | MPX | p/m-Xylene |
| C2P | 2-Pentene (cis) | 1N | 1-Nonene |
| TBA | Tertiary butanol | C9 | Nonane |
| CYP | Cyclopentane | STY | Styrene |
| 23DMB | 2,3-Dimethylbutane | OX | o-Xylene |
| 2MP | 2-Methylpentane | IPB | Isopropylbenzene |
| MTBE | MTBE | PROPB | n-Propylbenzene |
| 3MP | 3-Methylpentane | 1M3EB | 1-Methyl-3-ethylbenzene |
| 1HEX | 1-Hexene | 1M4EB | 1-Methyl-4-ethylbenzene |
| C6 | Hexane | 135TMB | 1,3,5-Trimethylbenzene |
| DIPE | Diisopropyl Ether | 1D | 1-Decene |
| ETBE | Ethyl Tertiary Butyl Ether | 1M2EB | 1-Methyl-2-ethylbenzene |
| 22DMP | 2,2-Dimethylpentane | C10 | Decane |
| MCYP | Methylcyclopentane | 124TMB | 1,2,4-Trimethylbenzene |
| 24DMP | 2,4-Dimethylpentane | SECBUT | sec-Butylbenzene |
| 12DCA | 1,2-Dichloroethane | 1M3IPB | 1-Methyl-3-isopropylbenzene |
| CH | Cyclohexane | 1M4IPB | 1-Methyl-4-isopropylbenzene |
| 2MH | 2-Methylhexane | 1M2IPB | 1-Methyl-2-isopropylbenzene |
| B | Benzene | IN | Indan |
| 23DMP | 2,3-Dimethylpentane | 1M3PB | 1-Methyl-3-propylbenzene |
| THIO | Thiophene | 1M4PB | 1-Methyl-4-propylbenzene |
| 3MH | 3-Methylhexane | BUTB | n-Butylbenzene |
| TAME | TAME | 12DM4EB | 1,2-Dimethyl-4-ethylbenzene |
| 1H | 1-Heptene/1,2-DMCP (trans) | 12DEB | 1,2-Diethylbenzene |
| ISO | Isooctane | 1M2PB | 1-Methyl-2-propylbenzene |
| C7 | Heptane | 14DM2EB | 1,4-Dimethyl-2-ethylbenzene |
| MCYH | Methylcyclohexane | C11 | Undecane |
| 25DMH | 2,5-Dimethylhexane | 13DM4EB | 1,3-Dimethyl-4-ethylbenzene |
| 24DMH | 2,4-Dimethylhexane | 13DM5EB | 1,3-Dimethyl-5-ethylbenzene |
| 223TMP | 2,2,3-Trimethylpentane | 13DM2EB | 1,3-Dimethyl-2-ethylbenzene |
| 234TMP | 2,3,4-Trimethylpentane | 12DM3EB | 1,2-Dimethyl-3-ethylbenzene |
| 233TMP | 2,3,3-Trimethylpentane | 1245TMP | 1,2,4,5-Tetramethylbenzene |
| 23DMH | 2,3-Dimethylhexane | PENTB | Pentylbenzene |
| 3EH | 3-Ethylhexane | C12 | Dodecane |
| 2MHEP | 2-Methylheptane | N0 | Naphthalene |
| 3MHEP | 3-Methylheptane | BTO | Benzothiophene |
| T | Toluene | MMT | MMT |
| 2MTHIO | 2-Methylthiophene | C13 | Tridecane |
| 3MTHIO | 3-Methylthiophene | 2MN | 2-Methylnaphthalene |
| 1O | 1-Octene | 1MN | 1-Methylnaphthalene |



Tentatively Identified Compounds:

- 1 Naphthalene
- 2 C1-Naphthalenes
- 3 Biphenyl
- 4 Acenaphthene
- 5 Fluorene
- 6 Phenanthrene
- 7 Fluoranthene
- 8 Pyrene
- 9 Benzo(a)anthracene
- 10 Chrysene

Figure1. Gas chromatogram for PRODUCT-12913.

Attachment 1



GZA GeoEnvironmental, Inc.

Chemical Fingerprinting at 642 Allens Avenue, Providence, Rhode Island

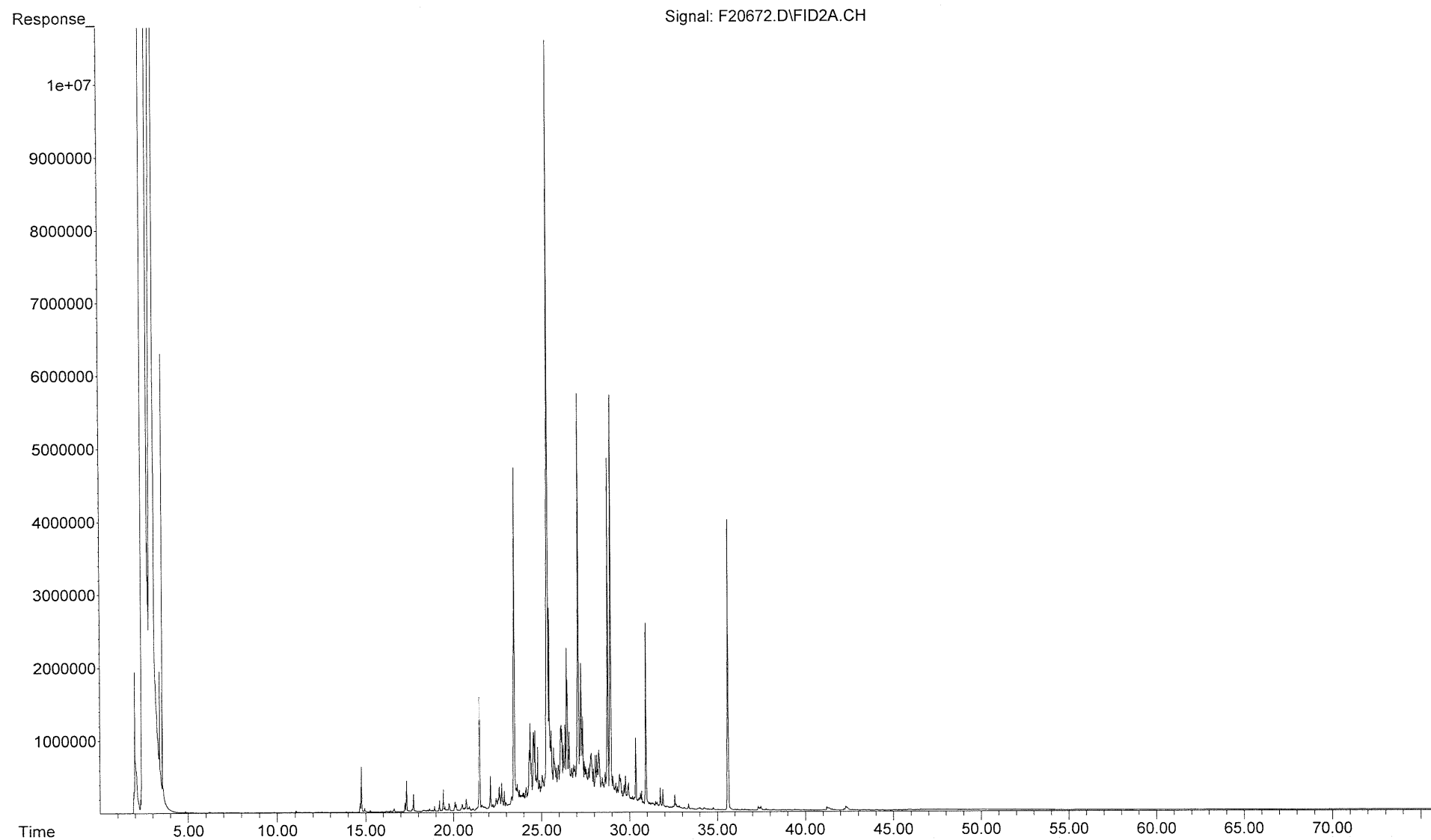
February 2013

Chain of Custody

GC/FID Chromatograms

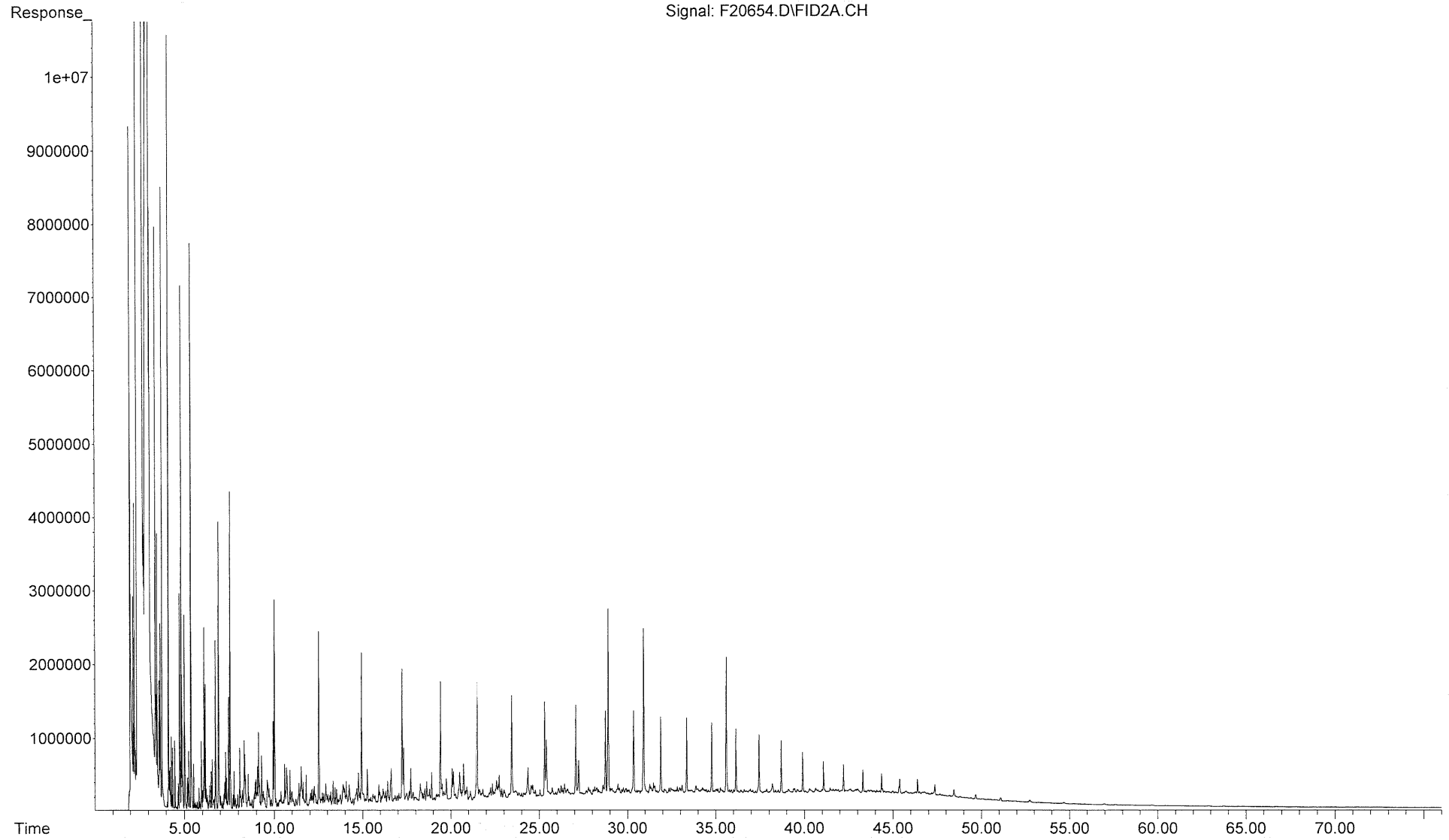
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Instrument : PAH2
Acquired : 30 Jan 2013 6:29 pm using AcqMethod FRNC2A.M
Sample Name: 1301009-01
Misc Info : 1X

PRODUCT-12913
1301009-01



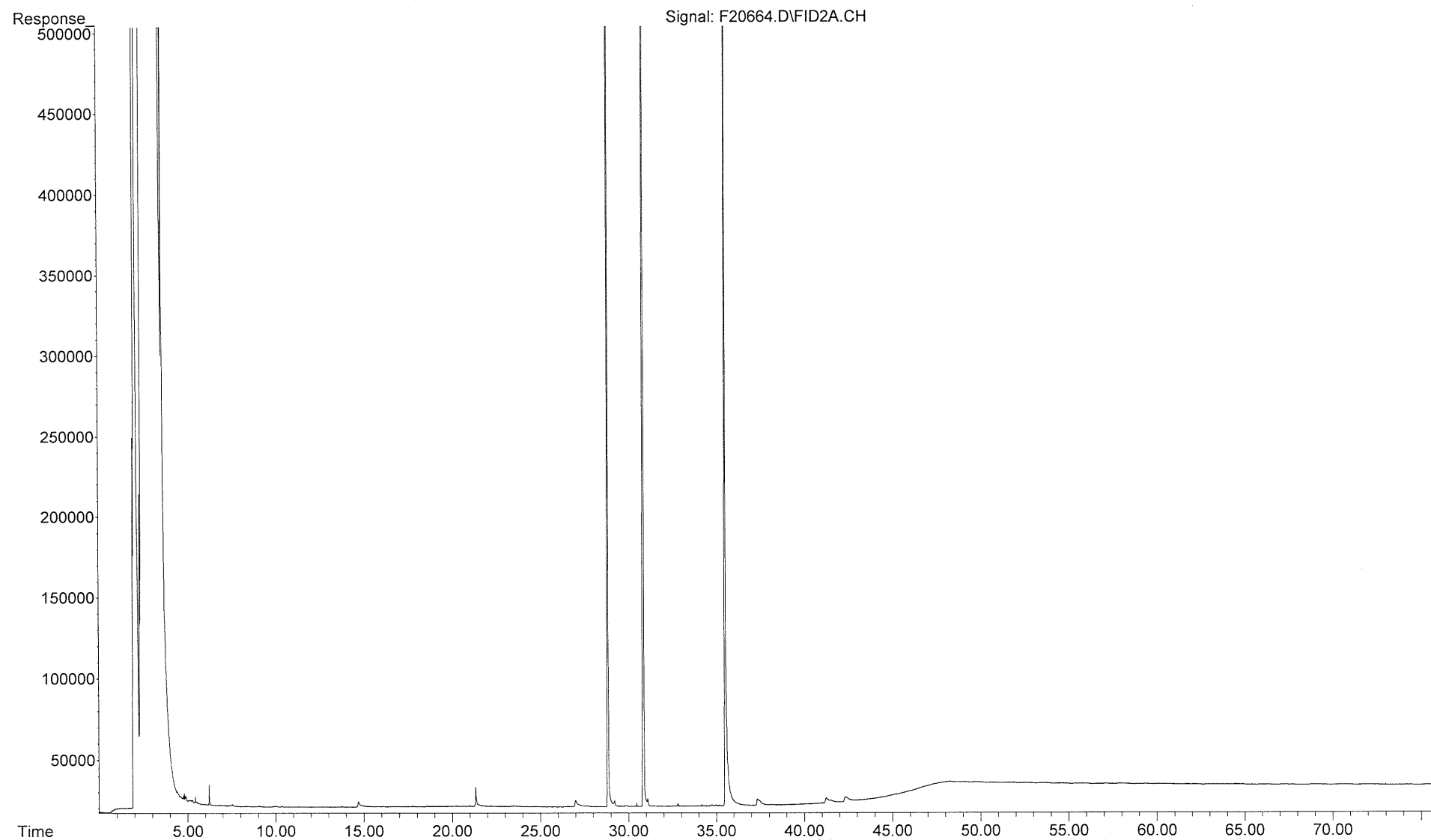
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Instrument : PAH2
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Sample Name: ANS
Misc Info : 1X WHAR22

**Reference Standard
North Slope Crude**



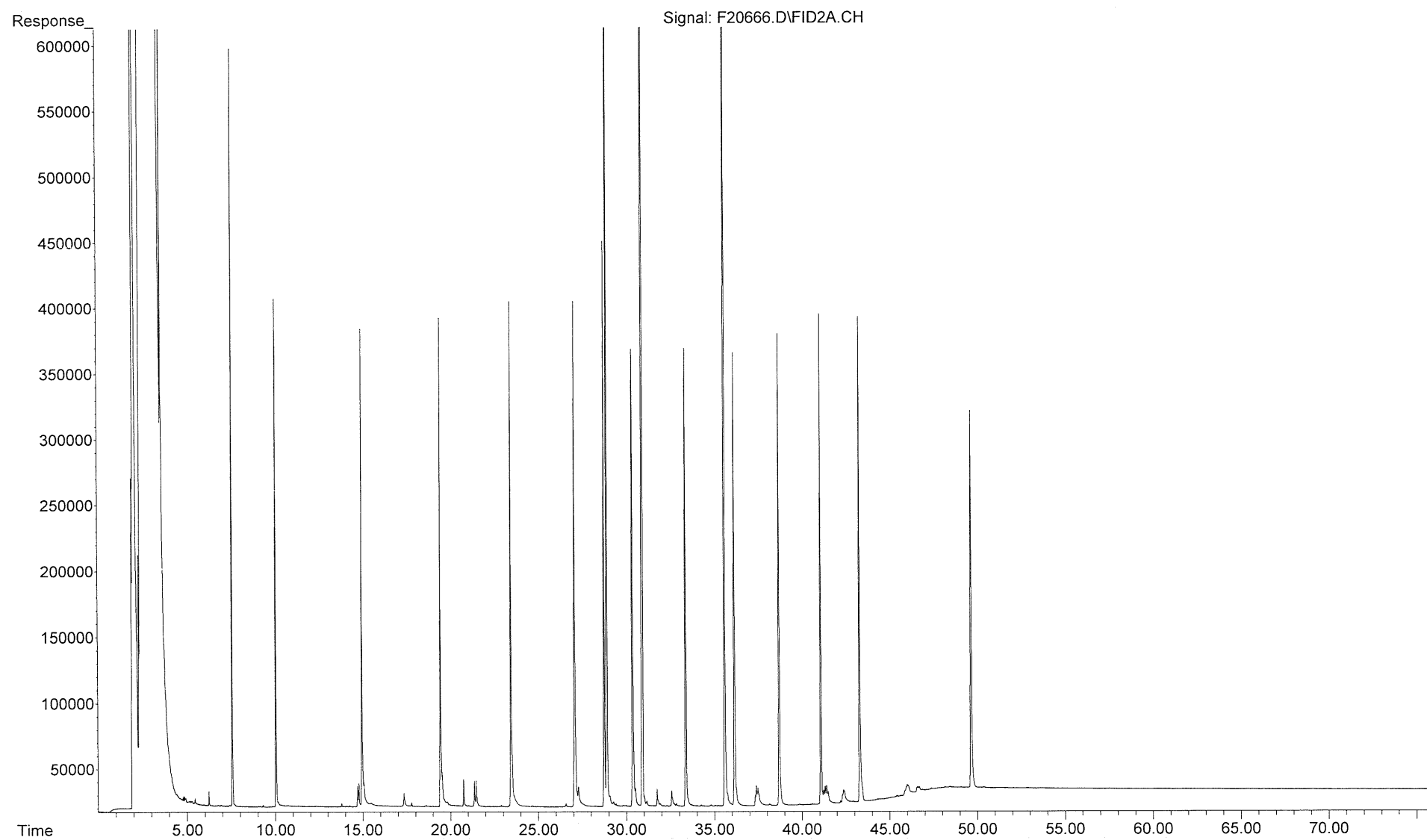
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... ta\F20664.D
Operator : AC
Instrument : PAH2
Acquired : 30 Jan 2013 11:35 am using AcqMethod FRNC2A.M
Sample Name: TW013013B01
Misc Info : 1X

Method Blank
TW013013B01



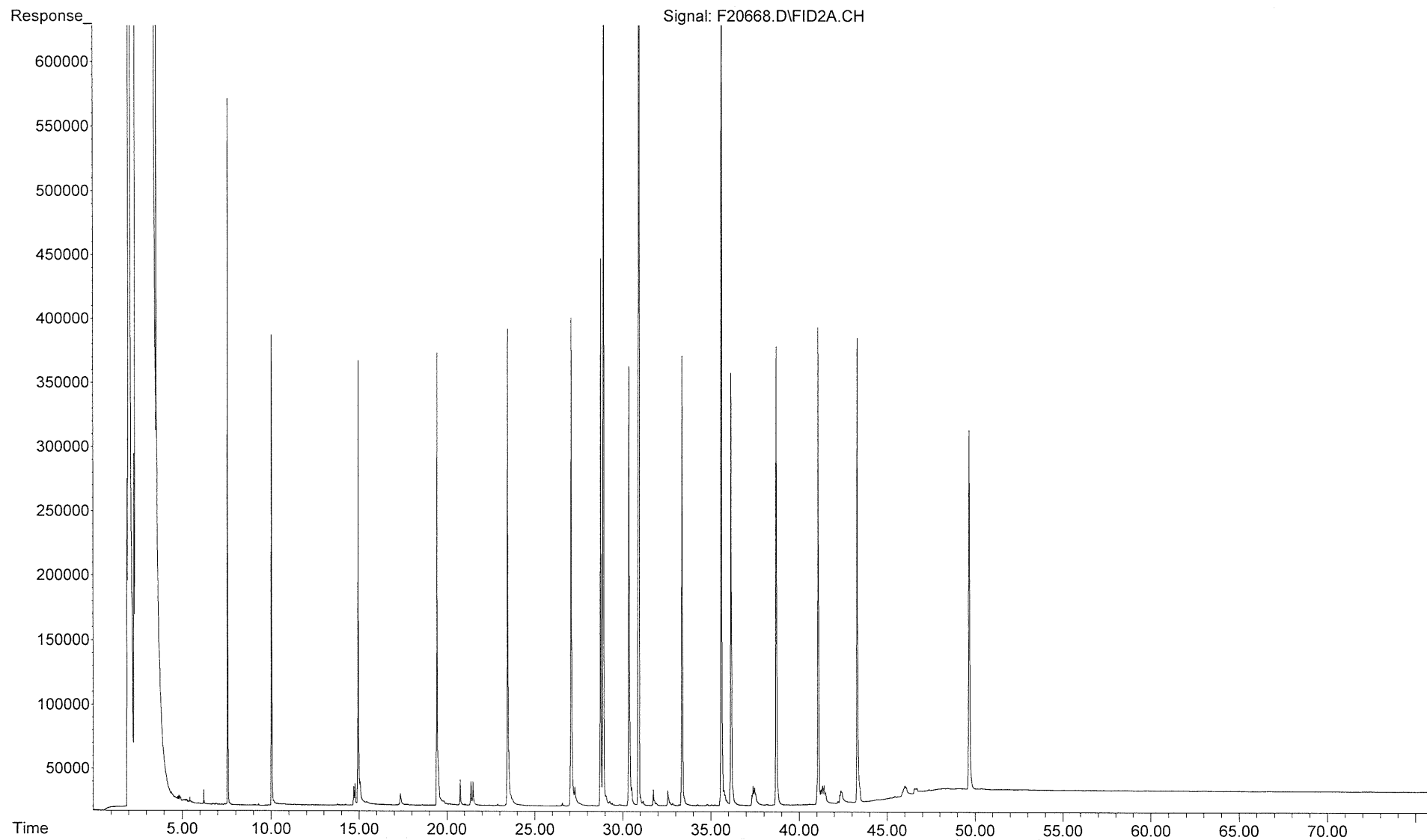
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... ta\F20666.D
Operator : AC
Instrument : PAH2
Acquired : 30 Jan 2013 2:01 pm using AcqMethod FRNC2A.M
Sample Name: TW013013LCS01
Misc Info : 1X

Laboratory Control Sample
TW013013LCS01



File :X:\nfe_f_whg\2013 AWHL Data\GZA-642 Allens Ave\1301009\TPH Da
... ta\F20668.D
Operator : AC
Instrument : PAH2
Acquired : 30 Jan 2013 3:34 pm using AcqMethod FRNC2A.M
Sample Name: TW013013LCSD01
Misc Info : 1X

Laboratory Control Sample Dup
TW013013LCSD01



Data Tables

TPH Data

Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|---------------|
| Client ID | PRODUCT-12913 |
| Lab ID | 1301009-01 |
| Matrix | Water |
| Reference Method | SHC |
| Batch ID | TW013013B01 |
| Date Collected | 01/29/2013 |
| Date Received | 01/29/2013 |
| Date Prepped | 01/30/2013 |
| Date Analyzed | 01/30/2013 |
| Sample Size (wet) | 210 |
| % Solid | 100.00 |
| File ID | F20672.D |
| Units | mg/L |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.314 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|---------------------------------------|--------|-------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 30.4 | 0.314 |

| | |
|-------------------------|-----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 107 |
| d50-Tetracosane | 94 |

Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|--------------|
| Client ID | Method Blank |
| Lab ID | TW013013B01 |
| Matrix | Water |
| Reference Method | SHC |
| Batch ID | TW013013B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 01/30/2013 |
| Date Analyzed | 01/30/2013 |
| Sample Size (wet) | 210 |
| % Solid | 100.00 |
| File ID | F20664.D |
| Units | mg/L |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.314 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|---------------------------------------|--------|-------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | U | 0.314 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 98 |
| d50-Tetracosane | 95 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | TW013013LCS01 |
| Matrix | Water |
| Reference Method | SHC |
| Batch ID | TW013013B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 01/30/2013 |
| Date Analyzed | 01/30/2013 |
| Sample Size (wet) | 210 |
| % Solid | 100.00 |
| File ID | F20666.D |
| Units | mg/L |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.314 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---------------------------------------|----------|---------|-------|-------------|-------------|-------------|
| SHC | C9 | n-Nonane (C9) | 0.0812 S | 0.00952 | 85 | 0.0952 | 50 | 130 |
| SHC | C10 | n-Decane (C10) | 0.0715 S | 0.00952 | 75 | 0.0952 | 50 | 130 |
| SHC | C12 | n-Dodecane (C12) | 0.0740 S | 0.00952 | 78 | 0.0952 | 50 | 130 |
| SHC | C14 | n-Tetradecane (C14) | 0.0758 S | 0.00952 | 80 | 0.0952 | 50 | 130 |
| SHC | C16 | n-Hexadecane (C16) | 0.0933 S | 0.00952 | 98 | 0.0952 | 50 | 130 |
| SHC | C18 | n-Octadecane (C18) | 0.102 S | 0.00952 | 107 | 0.0952 | 50 | 130 |
| SHC | C19 | n-Nonadecane (C19) | 0.0905 S | 0.00952 | 95 | 0.0952 | 50 | 130 |
| SHC | C20 | n-Eicosane (C20) | 0.0923 S | 0.00952 | 97 | 0.0952 | 50 | 130 |
| SHC | C22 | n-Docosane (C22) | 0.0973 S | 0.00952 | 102 | 0.0952 | 50 | 130 |
| SHC | C24 | n-Tetracosane (C24) | 0.0990 S | 0.00952 | 104 | 0.0952 | 50 | 130 |
| SHC | C26 | n-Hexacosane (C26) | 0.0984 S | 0.00952 | 103 | 0.0952 | 50 | 130 |
| SHC | C28 | n-Octacosane (C28) | 0.0962 S | 0.00952 | 101 | 0.0952 | 50 | 130 |
| SHC | C30 | n-Triacontane (C30) | 0.0976 S | 0.00952 | 103 | 0.0952 | 50 | 130 |
| SHC | C36 | n-Hexatriacontane (C36) | 0.0950 S | 0.00952 | 100 | 0.0952 | 50 | 130 |
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 1.30 | 0.314 | | | | |

| | |
|-------------------------|-----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 101 |
| d50-Tetracosane | 95 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|-------------------------------|
| Client ID | Laboratory Control Sample Dup |
| Lab ID | TW013013LCSD01 |
| Matrix | Water |
| Reference Method | SHC |
| Batch ID | TW013013B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 01/30/2013 |
| Date Analyzed | 01/30/2013 |
| Sample Size (wet) | 210 |
| % Solid | 100.00 |
| File ID | F20668.D |
| Units | mg/L |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.314 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|---------------------------------------|----------|---------|-------|-------------|-------------|-------------|-----|-----------|
| SHC | C9 | n-Nonane (C9) | 0.0773 S | 0.00952 | 81 | 0.0952 | 50 | 130 | 5 | 30 |
| SHC | C10 | n-Decane (C10) | 0.0680 S | 0.00952 | 71 | 0.0952 | 50 | 130 | 5 | 30 |
| SHC | C12 | n-Dodecane (C12) | 0.0722 S | 0.00952 | 76 | 0.0952 | 50 | 130 | 3 | 30 |
| SHC | C14 | n-Tetradecane (C14) | 0.0734 S | 0.00952 | 77 | 0.0952 | 50 | 130 | 3 | 30 |
| SHC | C16 | n-Hexadecane (C16) | 0.0919 S | 0.00952 | 96 | 0.0952 | 50 | 130 | 1 | 30 |
| SHC | C18 | n-Octadecane (C18) | 0.101 S | 0.00952 | 106 | 0.0952 | 50 | 130 | 1 | 30 |
| SHC | C19 | n-Nonadecane (C19) | 0.0901 S | 0.00952 | 95 | 0.0952 | 50 | 130 | 0 | 30 |
| SHC | C20 | n-Eicosane (C20) | 0.0917 S | 0.00952 | 96 | 0.0952 | 50 | 130 | 1 | 30 |
| SHC | C22 | n-Docosane (C22) | 0.0970 S | 0.00952 | 102 | 0.0952 | 50 | 130 | 0 | 30 |
| SHC | C24 | n-Tetracosane (C24) | 0.0978 S | 0.00952 | 103 | 0.0952 | 50 | 130 | 1 | 30 |
| SHC | C26 | n-Hexacosane (C26) | 0.0977 S | 0.00952 | 103 | 0.0952 | 50 | 130 | 1 | 30 |
| SHC | C28 | n-Octacosane (C28) | 0.0987 S | 0.00952 | 104 | 0.0952 | 50 | 130 | 3 | 30 |
| SHC | C30 | n-Triacontane (C30) | 0.0968 S | 0.00952 | 102 | 0.0952 | 50 | 130 | 1 | 30 |
| SHC | C36 | n-Hexatriacontane (C36) | 0.0941 S | 0.00952 | 99 | 0.0952 | 50 | 130 | 1 | 30 |
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 1.22 | 0.314 | | | | | | |

| | |
|-------------------------|-----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 101 |
| d50-Tetracosane | 93 |

Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|--------------------------|
| Client ID | Alaska North Slope Crude |
| Lab ID | TS010813ANC02 |
| Matrix | Oil |
| Reference Method | SHC |
| Batch ID | N/A |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 01/05/2013 |
| Sample Size (wet) | 0.10102 |
| % Solid | 100.00 |
| File ID | F20064.D |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 3270 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---------------------------------------|--------|------|-------|-------------|-------------|-------------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 595000 | 3270 | 107 | 554993.00 | 65 | 135 |

U: The analyte was analyzed for but not detected at the sample specific level reported
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
#: Value outside of QC Limits.
\$: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
x: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDI
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
\$: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

PIANO VOC Data

Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|---------------|
| Client ID | PRODUCT-12913 |
| Lab ID | 1301009-01 |
| Matrix | Water |
| Reference Method | PIANO |
| Batch ID | VO013013B05 |
| Date Collected | 01/29/2013 |
| Date Received | 01/29/2013 |
| Date Prepped | 01/30/2013 |
| Date Analyzed | 01/30/2013 |
| Sample Size (wet) | 5 |
| % Solid | 100.00 |
| File ID | V6004887.D |
| Units | µg/L |
| Final Volume | 5 |
| Dilution | 1 |
| Reporting Limit | 2.00 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|-----------------------------------|--------|--------|
| I | IP | Isopentane | 1.89 | J 2.00 |
| O | 1P | 1-Pentene | | U 2.00 |
| O | 2M1B | 2-Methyl-1-butene | | U 2.00 |
| P | C5 | Pentane | | U 2.00 |
| O | T2P | 2-Pentene (trans) | | U 2.00 |
| O | C2P | 2-Pentene (cis) | | U 2.00 |
| OX | TBA | Tertiary butanol | 5.65 | J 25.0 |
| N | CYP | Cyclopentane | | U 2.00 |
| I | 23DMB | 2,3-Dimethylbutane | | U 2.00 |
| I | 2MP | 2-Methylpentane | | U 2.00 |
| OX | MTBE | MTBE | | U 2.00 |
| I | 3MP | 3-Methylpentane | 0.151 | J 2.00 |
| O | 1HEX | 1-Hexene | | U 2.00 |
| P | C6 | Hexane | | U 2.00 |
| OX | DIPE | Diisopropyl Ether (DIPE) | | U 2.00 |
| OX | ETBE | Ethyl Tertiary Butyl Ether (ETBE) | | U 2.00 |
| I | 22DMP | 2,2-Dimethylpentane | | U 2.00 |
| N | MCYP | Methylcyclopentane | | U 2.00 |
| I | 24DMP | 2,4-Dimethylpentane | | U 2.00 |
| ADD | 12DCA | 1,2-Dichloroethane | | U 2.00 |
| N | CH | Cyclohexane | 0.526 | J 2.00 |
| | | 2-Methylhexane | | U 2.00 |
| A | B | Benzene | 3.22 | 2.00 |
| I | 23DMP | 2,3-Dimethylpentane | | U 2.00 |
| S | THIO | Thiophene | | U 2.00 |
| I | 3MH | 3-Methylhexane | | U 2.00 |
| OX | TAME | TAME | | U 2.00 |
| O | 1H | 1-Heptene/1,2-DMCP (trans) | | U 4.00 |
| I | ISO | Isooctane | | U 2.00 |
| P | C7 | Heptane | | U 2.00 |
| | | Methylcyclohexane | 0.206 | J 2.00 |
| I | 25DMH | 2,5-Dimethylhexane | | U 2.00 |
| I | 24DMH | 2,4-Dimethylhexane | | U 2.00 |
| I | 223TMP | 2,2,3-Trimethylpentane | | U 2.00 |
| I | 234TMP | 2,3,4-Trimethylpentane | | U 2.00 |
| I | 233TMP | 2,3,3-Trimethylpentane | | U 2.00 |
| I | 23DMH | 2,3-Dimethylhexane | | U 2.00 |
| I | 3EH | 3-Ethylhexane | | U 2.00 |
| I | 2MHEP | 2-Methylheptane | | U 2.00 |
| I | 3MHEP | 3-Methylheptane | | U 2.00 |
| A | T | Toluene | 2.04 | 2.00 |
| S | 2MTHIO | 2-Methylthiophene | | U 2.00 |
| S | 3MTHIO | 3-Methylthiophene | | U 2.00 |
| O | 1O | 1-Octene | | U 2.00 |
| P | C8 | Octane | | U 2.00 |

Project Name: GZA-642 Allens Ave
 Project Number:

Client ID PRODUCT-12913
 Lab ID 1301009-01
 Matrix Water
 Reference Method PIANO
 Batch ID VO013013B05
 Date Collected 01/29/2013
 Date Received 01/29/2013
 Date Prepped 01/30/2013
 Date Analyzed 01/30/2013
 Sample Size (wet) 5
 % Solid 100.00
 File ID V6004887.D
 Units µg/L
 Final Volume 5
 Dilution 1
 Reporting Limit 2.00

| Class | Abbrev | Analytes | Result | SSRL |
|-------|---------|-----------------------------|--------|---------|
| ADD | 12DBE | 1,2-Dibromoethane | | U 2.00 |
| A | EB | Ethylbenzene | 0.389 | J 2.00 |
| S | 2ETHIO | 2-Ethylthiophene | | U 2.00 |
| A | MPX | p/m-Xylene | 1.19 | J 4.00 |
| O | 1N | 1-Nonene | | U 2.00 |
| P | C9 | Nonane | | U 2.00 |
| A | STY | Styrene | | U 2.00 |
| A | OX | o-Xylene | 0.565 | J 2.00 |
| A | IPB | Isopropylbenzene | | U 2.00 |
| A | PROPB | n-Propylbenzene | | U 2.00 |
| A | 1M3EB | 1-Methyl-3-ethylbenzene | 0.186 | J 2.00 |
| A | 1M4EB | 1-Methyl-4-ethylbenzene | 0.184 | JB 2.00 |
| A | 135TMB | 1,3,5-Trimethylbenzene | 0.120 | J 2.00 |
| O | 1D | 1-Decene | | U 2.00 |
| A | 1M2EB | 1-Methyl-2-ethylbenzene | 0.273 | J 2.00 |
| P | C10 | Decane | | U 2.00 |
| A | 124TMB | 1,2,4-Trimethylbenzene | 0.446 | J 2.00 |
| A | SECBUT | sec-Butylbenzene | | U 2.00 |
| A | 1M3IPB | 1-Methyl-3-isopropylbenzene | | U 2.00 |
| A | 1M4IPB | 1-Methyl-4-isopropylbenzene | | U 2.00 |
| A | 1M2IPB | 1-Methyl-2-isopropylbenzene | | U 2.00 |
| A | IN | Indan | 5.07 | 2.00 |
| A | 1M3PB | 1-Methyl-3-propylbenzene | | U 2.00 |
| A | 1M4PB | 1-Methyl-4-propylbenzene | | U 2.00 |
| A | BUTB | n-Butylbenzene | | U 2.00 |
| A | 12DM4EB | 1,2-Dimethyl-4-ethylbenzene | 0.187 | JB 2.00 |
| A | 12DEB | 1,2-Diethylbenzene | 0.107 | J 2.00 |
| A | 1M2PB | 1-Methyl-2-propylbenzene | 0.141 | JB 2.00 |
| A | 14DM2EB | 1,4-Dimethyl-2-ethylbenzene | 0.157 | JB 2.00 |
| P | C11 | Undecane | 0.126 | J 2.00 |
| A | 13DM4EB | 1,3-Dimethyl-4-ethylbenzene | 0.175 | JB 2.00 |
| A | 13DM5EB | 1,3-Dimethyl-5-ethylbenzene | 0.402 | J 2.00 |
| A | 13DM2EB | 1,3-Dimethyl-2-ethylbenzene | 0.274 | JB 2.00 |
| A | 12DM3EB | 1,2-Dimethyl-3-ethylbenzene | 0.237 | JB 2.00 |
| A | 1245TMP | 1,2,4,5-Tetramethylbenzene | 0.437 | JB 2.00 |
| A | PENTB | Pentylbenzene | | U 2.00 |
| P | C12 | Dodecane | 0.401 | J 2.00 |
| 2 | N0 | Naphthalene | 134 | 2.00 |
| 2 | BT0 | Benzothiophene | 3.74 | B 2.00 |
| ADD | MMT | MMT | | U 5.00 |
| P | C13 | Tridecane | 0.600 | J 5.00 |
| A | 2MN | 2-Methylnaphthalene | 72.1 | 5.00 |
| A | 1MN | 1-Methylnaphthalene | 42.0 | 5.00 |

Surrogates (% Recovery)
 Dibromofluoromethane 91
 Toluene-d8 85
 4-Bromofluorobenzene 112

Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|--------------|
| Client ID | Method Blank |
| Lab ID | VO013013B05 |
| Matrix | Water |
| Reference Method | PIANO |
| Batch ID | VO013013B05 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 01/30/2013 |
| Date Analyzed | 01/30/2013 |
| Sample Size (wet) | 5 |
| % Solid | 100.00 |
| File ID | V6004886.D |
| Units | µg/L |
| Final Volume | 5 |
| Dilution | 1 |
| Reporting Limit | 2.00 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|-----------------------------------|--------|------|
| I | IP | Isopentane | U | 2.00 |
| O | 1P | 1-Pentene | U | 2.00 |
| O | 2M1B | 2-Methyl-1-butene | U | 2.00 |
| P | C5 | Pentane | U | 2.00 |
| O | T2P | 2-Pentene (trans) | U | 2.00 |
| O | C2P | 2-Pentene (cis) | U | 2.00 |
| OX | TBA | Tertiary butanol | U | 25.0 |
| N | CYP | Cyclopentane | U | 2.00 |
| I | 23DMB | 2,3-Dimethylbutane | U | 2.00 |
| I | 2MP | 2-Methylpentane | U | 2.00 |
| OX | MTBE | MTBE | U | 2.00 |
| I | 3MP | 3-Methylpentane | U | 2.00 |
| O | 1HEX | 1-Hexene | U | 2.00 |
| P | C6 | Hexane | U | 2.00 |
| OX | DIPE | Diisopropyl Ether (DIPE) | U | 2.00 |
| OX | ETBE | Ethyl Tertiary Butyl Ether (ETBE) | U | 2.00 |
| I | 22DMP | 2,2-Dimethylpentane | U | 2.00 |
| N | MCYP | Methylcyclopentane | U | 2.00 |
| I | 24DMP | 2,4-Dimethylpentane | U | 2.00 |
| ADD | 12DCA | 1,2-Dichloroethane | U | 2.00 |
| N | CH | Cyclohexane | U | 2.00 |
| | | 2-Methylhexane | U | 2.00 |
| A | B | Benzene | U | 2.00 |
| I | 23DMP | 2,3-Dimethylpentane | U | 2.00 |
| S | THIO | Thiophene | U | 2.00 |
| I | 3MH | 3-Methylhexane | U | 2.00 |
| OX | TAME | TAME | U | 2.00 |
| O | 1H | 1-Heptene/1,2-DMCP (trans) | U | 4.00 |
| I | ISO | Isooctane | U | 2.00 |
| P | C7 | Heptane | U | 2.00 |
| | | Methylcyclohexane | U | 2.00 |
| I | 25DMH | 2,5-Dimethylhexane | U | 2.00 |
| I | 24DMH | 2,4-Dimethylhexane | U | 2.00 |
| I | 223TMP | 2,2,3-Trimethylpentane | U | 2.00 |
| I | 234TMP | 2,3,4-Trimethylpentane | U | 2.00 |
| I | 233TMP | 2,3,3-Trimethylpentane | U | 2.00 |
| I | 23DMH | 2,3-Dimethylhexane | U | 2.00 |
| I | 3EH | 3-Ethylhexane | U | 2.00 |
| I | 2MHPEP | 2-Methylheptane | U | 2.00 |
| I | 3MHPEP | 3-Methylheptane | U | 2.00 |
| A | T | Toluene | U | 2.00 |
| S | 2MTHIO | 2-Methylthiophene | U | 2.00 |
| S | 3MTHIO | 3-Methylthiophene | U | 2.00 |
| O | 1O | 1-Octene | U | 2.00 |
| P | C8 | Octane | U | 2.00 |

Project Name: GZA-642 Allens Ave
 Project Number:

Client ID Method Blank
 Lab ID VO013013B05
 Matrix Water
 Reference Method PIANO
 Batch ID VO013013B05
 Date Collected N/A
 Date Received N/A
 Date Prepped 01/30/2013
 Date Analyzed 01/30/2013
 Sample Size (wet) 5
 % Solid 100.00
 File ID V6004886.D
 Units µg/L
 Final Volume 5
 Dilution 1
 Reporting Limit 2.00

| Class | Abbrev | Analytes | Result | SSRL |
|-------|---------|-----------------------------|---------|------|
| ADD | 12DBE | 1,2-Dibromoethane | U | 2.00 |
| A | EB | Ethylbenzene | U | 2.00 |
| S | 2ETHIO | 2-Ethylthiophene | U | 2.00 |
| A | MPX | p/m-Xylene | U | 4.00 |
| O | 1N | 1-Nonene | U | 2.00 |
| P | C9 | Nonane | U | 2.00 |
| A | STY | Styrene | U | 2.00 |
| A | OX | o-Xylene | U | 2.00 |
| A | IPB | Isopropylbenzene | U | 2.00 |
| A | PROPB | n-Propylbenzene | U | 2.00 |
| A | 1M3EB | 1-Methyl-3-ethylbenzene | U | 2.00 |
| A | 1M4EB | 1-Methyl-4-ethylbenzene | 0.348 J | 2.00 |
| A | 135TMB | 1,3,5-Trimethylbenzene | U | 2.00 |
| O | 1D | 1-Decene | U | 2.00 |
| A | 1M2EB | 1-Methyl-2-ethylbenzene | U | 2.00 |
| P | C10 | Decane | U | 2.00 |
| A | 124TMB | 1,2,4-Trimethylbenzene | U | 2.00 |
| A | SECBUT | sec-Butylbenzene | U | 2.00 |
| A | 1M3IPB | 1-Methyl-3-isopropylbenzene | U | 2.00 |
| A | 1M4IPB | 1-Methyl-4-isopropylbenzene | 0.297 J | 2.00 |
| A | 1M2IPB | 1-Methyl-2-isopropylbenzene | U | 2.00 |
| A | IN | Indan | 0.203 J | 2.00 |
| A | 1M3PB | 1-Methyl-3-propylbenzene | 0.305 J | 2.00 |
| A | 1M4PB | 1-Methyl-4-propylbenzene | U | 2.00 |
| A | BUTB | n-Butylbenzene | U | 2.00 |
| A | 12DM4EB | 1,2-Dimethyl-4-ethylbenzene | 0.103 J | 2.00 |
| A | 12DEB | 1,2-Diethylbenzene | U | 2.00 |
| A | 1M2PB | 1-Methyl-2-propylbenzene | 0.342 J | 2.00 |
| A | 14DM2EB | 1,4-Dimethyl-2-ethylbenzene | 0.105 J | 2.00 |
| P | C11 | Undecane | U | 2.00 |
| A | 13DM4EB | 1,3-Dimethyl-4-ethylbenzene | 0.138 J | 2.00 |
| A | 13DM5EB | 1,3-Dimethyl-5-ethylbenzene | U | 2.00 |
| A | 13DM2EB | 1,3-Dimethyl-2-ethylbenzene | 0.395 J | 2.00 |
| A | 12DM3EB | 1,2-Dimethyl-3-ethylbenzene | 0.193 J | 2.00 |
| A | 1245TMP | 1,2,4,5-Tetramethylbenzene | 0.143 J | 2.00 |
| A | PENTB | Pentylbenzene | U | 2.00 |
| P | C12 | Dodecane | U | 2.00 |
| 2 | N0 | Naphthalene | 0.340 J | 2.00 |
| 2 | BT0 | Benzothiophene | 1.19 J | 2.00 |
| ADD | MMT | MMT | U | 5.00 |
| P | C13 | Tridecane | U | 5.00 |
| A | 2MN | 2-Methylnaphthalene | 0.380 J | 5.00 |
| A | 1MN | 1-Methylnaphthalene | 0.330 J | 5.00 |

Surrogates (% Recovery)
 Dibromofluoromethane 85
 Toluene-d8 85
 4-Bromofluorobenzene 110

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | VO013013LCS04 |
| Matrix | Water |
| Reference Method | PIANO |
| Batch ID | VO013013B05 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 01/30/2013 |
| Date Analyzed | 01/30/2013 |
| Sample Size (wet) | 5 |
| % Solid | 100.00 |
| File ID | V6004882.D |
| Units | µg/L |
| Final Volume | 5 |
| Dilution | 1 |
| Reporting Limit | 2.00 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|-----------------------------------|--------|------|-------|-------------|-------------|-------------|
| I | IP | Isopentane | U | 2.00 | | | | |
| O | 1P | 1-Pentene | 21.4 S | 2.00 | 107 | 20.0 | 50 | 130 |
| O | 2M1B | 2-Methyl-1-butene | U | 2.00 | | | | |
| P | C5 | Pentane | 22.9 S | 2.00 | 114 | 20.0 | 50 | 130 |
| O | T2P | 2-Pentene (trans) | U | 2.00 | | | | |
| O | C2P | 2-Pentene (cis) | U | 2.00 | | | | |
| OX | TBA | Tertiary butanol | 117 S | 25.0 | 117 | 100 | 50 | 130 |
| N | CYP | Cyclopentane | 20.9 S | 2.00 | 104 | 20.0 | 50 | 130 |
| I | 23DMB | 2,3-Dimethylbutane | U | 2.00 | | | | |
| I | 2MP | 2-Methylpentane | 20.3 S | 2.00 | 102 | 20.0 | 50 | 130 |
| OX | MTBE | MTBE | 21.0 S | 2.00 | 105 | 20.0 | 50 | 130 |
| I | 3MP | 3-Methylpentane | 20.9 S | 2.00 | 104 | 20.0 | 50 | 130 |
| O | 1HEX | 1-Hexene | 19.6 S | 2.00 | 98 | 20.0 | 50 | 130 |
| P | C6 | Hexane | 20.2 S | 2.00 | 101 | 20.0 | 50 | 130 |
| OX | DIPE | Diisopropyl Ether (DIPE) | 19.7 S | 2.00 | 98 | 20.0 | 50 | 130 |
| OX | ETBE | Ethyl Tertiary Butyl Ether (ETBE) | 19.6 S | 2.00 | 98 | 20.0 | 50 | 130 |
| I | 22DMP | 2,2-Dimethylpentane | U | 2.00 | | | | |
| N | MCYP | Methylcyclopentane | 19.5 S | 2.00 | 97 | 20.0 | 50 | 130 |
| I | 24DMP | 2,4-Dimethylpentane | 19.4 S | 2.00 | 97 | 20.0 | 50 | 130 |
| ADD | 12DCA | 1,2-Dichloroethane | U | 2.00 | | | | |
| N | CH | Cyclohexane | 19.7 S | 2.00 | 99 | 20.0 | 50 | 130 |
| | | 2-Methylhexane | 20.2 S | 2.00 | 101 | 20.0 | 50 | 130 |
| A | B | Benzene | 21.2 S | 2.00 | 106 | 20.0 | 50 | 130 |
| I | 23DMP | 2,3-Dimethylpentane | 19.9 S | 2.00 | 100 | 20.0 | 50 | 130 |
| S | THIO | Thiophene | U | 2.00 | | | | |
| I | 3MH | 3-Methylhexane | 18.2 S | 2.00 | 91 | 20.0 | 50 | 130 |
| OX | TAME | TAME | 19.2 S | 2.00 | 96 | 20.0 | 50 | 130 |
| O | 1H | 1-Heptene/1,2-DMCP (trans) | 13.1 | 4.00 | | | | |
| I | ISO | Isooctane | 19.1 S | 2.00 | 96 | 20.0 | 50 | 130 |
| P | C7 | Heptane | 20.0 S | 2.00 | 100 | 20.0 | 50 | 130 |
| | | Methylcyclohexane | 20.9 S | 2.00 | 105 | 20.0 | 50 | 130 |
| I | 25DMH | 2,5-Dimethylhexane | U | 2.00 | | | | |
| I | 24DMH | 2,4-Dimethylhexane | U | 2.00 | | | | |
| I | 223TMP | 2,2,3-Trimethylpentane | U | 2.00 | | | | |
| I | 234TMP | 2,3,4-Trimethylpentane | U | 2.00 | | | | |
| I | 233TMP | 2,3,3-Trimethylpentane | U | 2.00 | | | | |
| I | 23DMH | 2,3-Dimethylhexane | U | 2.00 | | | | |
| I | 3EH | 3-Ethylhexane | U | 2.00 | | | | |
| I | 2MHEP | 2-Methylheptane | 18.5 S | 2.00 | 92 | 20.0 | 50 | 130 |
| I | 3MHEP | 3-Methylheptane | 19.9 S | 2.00 | 100 | 20.0 | 50 | 130 |
| A | T | Toluene | 20.4 S | 2.00 | 102 | 20.0 | 50 | 130 |
| S | 2MTHIO | 2-Methylthiophene | U | 2.00 | | | | |
| S | 3MTHIO | 3-Methylthiophene | U | 2.00 | | | | |
| O | 1O | 1-Octene | U | 2.00 | | | | |
| P | C8 | Octane | 19.7 S | 2.00 | 99 | 20.0 | 50 | 130 |

Project Name: GZA-642 Allens Ave
Project Number:

Client ID Laboratory Control Sample
Lab ID VO013013LCS04
Matrix Water
Reference Method PIANO
Batch ID VO013013B05
Date Collected N/A
Date Received N/A
Date Prepped 01/30/2013
Date Analyzed 01/30/2013
Sample Size (wet) 5
% Solid 100.00
File ID V6004882.D
Units µg/L
Final Volume 5
Dilution 1
Reporting Limit 2.00

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|---------|-----------------------------|--------|------|-------|-------------|-------------|-------------|
| ADD | 12DBE | 1,2-Dibromoethane | U | 2.00 | | | | |
| A | EB | Ethylbenzene | 19.7 S | 2.00 | 99 | 20.0 | 50 | 130 |
| S | 2ETHIO | 2-Ethylthiophene | U | 2.00 | | | | |
| A | MPX | p/m-Xylene | 40.7 S | 4.00 | 102 | 40.0 | 50 | 130 |
| O | 1N | 1-Nonene | U | 2.00 | | | | |
| P | C9 | Nonane | 17.8 S | 2.00 | 89 | 20.0 | 50 | 130 |
| A | STY | Styrene | U | 2.00 | | | | |
| A | OX | o-Xylene | 20.3 S | 2.00 | 102 | 20.0 | 50 | 130 |
| A | IPB | Isopropylbenzene | 19.5 S | 2.00 | 97 | 20.0 | 50 | 130 |
| A | PROPB | n-Propylbenzene | 20.1 S | 2.00 | 101 | 20.0 | 50 | 130 |
| A | 1M3EB | 1-Methyl-3-ethylbenzene | 19.4 S | 2.00 | 97 | 20.0 | 50 | 130 |
| A | 1M4EB | 1-Methyl-4-ethylbenzene | 20.3 S | 2.00 | 102 | 20.0 | 50 | 130 |
| A | 135TMB | 1,3,5-Trimethylbenzene | 20.1 S | 2.00 | 101 | 20.0 | 50 | 130 |
| O | 1D | 1-Decene | 20.3 S | 2.00 | 101 | 20.0 | 50 | 130 |
| A | 1M2EB | 1-Methyl-2-ethylbenzene | 20.3 S | 2.00 | 102 | 20.0 | 50 | 130 |
| P | C10 | Decane | 20.7 S | 2.00 | 103 | 20.0 | 50 | 130 |
| A | 124TMB | 1,2,4-Trimethylbenzene | 19.8 S | 2.00 | 99 | 20.0 | 50 | 130 |
| A | SECBUT | sec-Butylbenzene | 19.3 S | 2.00 | 96 | 20.0 | 50 | 130 |
| A | 1M3IPB | 1-Methyl-3-isopropylbenzene | U | 2.00 | | | | |
| A | 1M4IPB | 1-Methyl-4-isopropylbenzene | U | 2.00 | | | | |
| A | 1M2IPB | 1-Methyl-2-isopropylbenzene | U | 2.00 | | | | |
| A | IN | Indan | U | 2.00 | | | | |
| A | 1M3PB | 1-Methyl-3-propylbenzene | U | 2.00 | | | | |
| A | 1M4PB | 1-Methyl-4-propylbenzene | 19.4 S | 2.00 | 97 | 20.0 | 50 | 130 |
| A | BUTB | n-Butylbenzene | 20.3 S | 2.00 | 101 | 20.0 | 50 | 130 |
| A | 12DM4EB | 1,2-Dimethyl-4-ethylbenzene | U | 2.00 | | | | |
| A | 12DEB | 1,2-Diethylbenzene | 17.7 S | 2.00 | 88 | 20.0 | 50 | 130 |
| A | 1M2PB | 1-Methyl-2-propylbenzene | U | 2.00 | | | | |
| A | 14DM2EB | 1,4-Dimethyl-2-ethylbenzene | U | 2.00 | | | | |
| P | C11 | Undecane | 20.1 S | 2.00 | 101 | 20.0 | 50 | 130 |
| A | 13DM4EB | 1,3-Dimethyl-4-ethylbenzene | U | 2.00 | | | | |
| A | 13DM5EB | 1,3-Dimethyl-5-ethylbenzene | 19.1 | 2.00 | | | | |
| A | 13DM2EB | 1,3-Dimethyl-2-ethylbenzene | U | 2.00 | | | | |
| A | 12DM3EB | 1,2-Dimethyl-3-ethylbenzene | U | 2.00 | | | | |
| A | 1245TMP | 1,2,4,5-Tetramethylbenzene | U | 2.00 | | | | |
| A | PENTB | Pentylbenzene | 19.6 S | 2.00 | 98 | 20.0 | 50 | 130 |
| P | C12 | Dodecane | 22.9 S | 2.00 | 115 | 20.0 | 50 | 130 |
| 2 | N0 | Naphthalene | U | 2.00 | | | | |
| 2 | BT0 | Benzothiophene | U | 2.00 | | | | |
| ADD | MMT | MMT | U | 5.00 | | | | |
| P | C13 | Tridecane | U | 5.00 | | | | |
| A | 2MN | 2-Methylnaphthalene | U | 5.00 | | | | |
| A | 1MN | 1-Methylnaphthalene | U | 5.00 | | | | |

Surrogates (% Recovery)
Dibromofluoromethane 87
Toluene-d8 87
4-Bromofluorobenzene 112

Project Name: GZA-642 Allens Ave
 Project Number:

Client ID Laboratory Control Sample Dup
 Lab ID VO013013LCSD04
 Matrix Water
 Reference Method PIANO
 Batch ID VO013013B05
 Date Collected N/A
 Date Received N/A
 Date Prepped 01/30/2013
 Date Analyzed 01/30/2013
 Sample Size (wet) 5
 % Solid 100.00
 File ID V6004883.D
 Units µg/L
 Final Volume 5
 Dilution 1
 Reporting Limit 2.00

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|-----------------------------------|--------|------|-------|-------------|-------------|-------------|-----|-----------|
| I | IP | Isopentane | U | 2.00 | | | | | | |
| O | 1P | 1-Pentene | 21.8 S | 2.00 | 109 | 20.0 | 50 | 130 | 2 | 30 |
| O | 2M1B | 2-Methyl-1-butene | U | 2.00 | | | | | | |
| P | C5 | Pentane | 22.9 S | 2.00 | 114 | 20.0 | 50 | 130 | 0 | 30 |
| O | T2P | 2-Pentene (trans) | U | 2.00 | | | | | | |
| O | C2P | 2-Pentene (cis) | U | 2.00 | | | | | | |
| OX | TBA | Tertiary butanol | 120 S | 25.0 | 120 | 100 | 50 | 130 | 2 | 30 |
| N | CYP | Cyclopentane | 20.7 S | 2.00 | 104 | 20.0 | 50 | 130 | 1 | 30 |
| I | 23DMB | 2,3-Dimethylbutane | U | 2.00 | | | | | | |
| I | 2MP | 2-Methylpentane | 20.7 S | 2.00 | 104 | 20.0 | 50 | 130 | 2 | 30 |
| OX | MTBE | MTBE | 21.4 S | 2.00 | 107 | 20.0 | 50 | 130 | 2 | 30 |
| I | 3MP | 3-Methylpentane | 21.1 S | 2.00 | 105 | 20.0 | 50 | 130 | 1 | 30 |
| O | 1HEX | 1-Hexene | 19.5 S | 2.00 | 98 | 20.0 | 50 | 130 | 1 | 30 |
| P | C6 | Hexane | 19.5 S | 2.00 | 98 | 20.0 | 50 | 130 | 4 | 30 |
| OX | DIPE | Diisopropyl Ether (DIPE) | 19.8 S | 2.00 | 99 | 20.0 | 50 | 130 | 1 | 30 |
| OX | ETBE | Ethyl Tertiary Butyl Ether (ETBE) | 19.9 S | 2.00 | 99 | 20.0 | 50 | 130 | 1 | 30 |
| I | 22DMP | 2,2-Dimethylpentane | U | 2.00 | | | | | | |
| N | MCYP | Methylcyclopentane | 19.6 S | 2.00 | 98 | 20.0 | 50 | 130 | 1 | 30 |
| I | 24DMP | 2,4-Dimethylpentane | 20.3 S | 2.00 | 101 | 20.0 | 50 | 130 | 4 | 30 |
| ADD | 12DCA | 1,2-Dichloroethane | U | 2.00 | | | | | | |
| N | CH | Cyclohexane | 19.6 S | 2.00 | 98 | 20.0 | 50 | 130 | 0 | 30 |
| | | 2-Methylhexane | 20.5 S | 2.00 | 102 | 20.0 | 50 | 130 | 1 | 30 |
| A | B | Benzene | 20.8 S | 2.00 | 104 | 20.0 | 50 | 130 | 2 | 30 |
| I | 23DMP | 2,3-Dimethylpentane | 20.2 S | 2.00 | 101 | 20.0 | 50 | 130 | 2 | 30 |
| S | THIO | Thiophene | U | 2.00 | | | | | | |
| I | 3MH | 3-Methylhexane | 18.3 S | 2.00 | 92 | 20.0 | 50 | 130 | 1 | 30 |
| OX | TAME | TAME | 19.3 S | 2.00 | 97 | 20.0 | 50 | 130 | 0 | 30 |
| O | 1H | 1-Heptene/1,2-DMCP (trans) | 13.5 | 4.00 | | | | | | |
| I | ISO | Isooctane | 19.2 S | 2.00 | 96 | 20.0 | 50 | 130 | 0 | 30 |
| P | C7 | Heptane | 20.1 S | 2.00 | 101 | 20.0 | 50 | 130 | 1 | 30 |
| | | Methylcyclohexane | 21.0 S | 2.00 | 105 | 20.0 | 50 | 130 | 0 | 30 |
| I | 25DMH | 2,5-Dimethylhexane | U | 2.00 | | | | | | |
| I | 24DMH | 2,4-Dimethylhexane | U | 2.00 | | | | | | |
| I | 223TMP | 2,2,3-Trimethylpentane | U | 2.00 | | | | | | |
| I | 234TMP | 2,3,4-Trimethylpentane | U | 2.00 | | | | | | |
| I | 233TMP | 2,3,3-Trimethylpentane | U | 2.00 | | | | | | |
| I | 23DMH | 2,3-Dimethylhexane | U | 2.00 | | | | | | |
| I | 3EH | 3-Ethylhexane | U | 2.00 | | | | | | |
| I | 2MHHEP | 2-Methylheptane | 18.7 S | 2.00 | 94 | 20.0 | 50 | 130 | 2 | 30 |
| I | 3MHHEP | 3-Methylheptane | 20.2 S | 2.00 | 101 | 20.0 | 50 | 130 | 1 | 30 |
| A | T | Toluene | 20.6 S | 2.00 | 103 | 20.0 | 50 | 130 | 1 | 30 |
| S | 2MTHIO | 2-Methylthiophene | U | 2.00 | | | | | | |
| S | 3MTHIO | 3-Methylthiophene | U | 2.00 | | | | | | |
| O | 1O | 1-Octene | U | 2.00 | | | | | | |
| P | C8 | Octane | 19.9 S | 2.00 | 99 | 20.0 | 50 | 130 | 1 | 30 |

Project Name: GZA-642 Allens Ave
 Project Number:

Client ID Laboratory Control Sample Dup
 Lab ID VO013013LCSD04
 Matrix Water
 Reference Method PIANO
 Batch ID VO013013B05
 Date Collected N/A
 Date Received N/A
 Date Prepped 01/30/2013
 Date Analyzed 01/30/2013
 Sample Size (wet) 5
 % Solid 100.00
 File ID V6004883.D
 Units µg/L
 Final Volume 5
 Dilution 1
 Reporting Limit 2.00

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|---------|-----------------------------|--------|------|-------|-------------|-------------|-------------|-----|-----------|
| ADD | 12DBE | 1,2-Dibromoethane | U | 2.00 | | | | | | |
| A | EB | Ethylbenzene | 19.6 S | 2.00 | 98 | 20.0 | 50 | 130 | 1 | 30 |
| S | 2ETHIO | 2-Ethylthiophene | U | 2.00 | | | | | | |
| A | MPX | p/m-Xylene | 40.9 S | 4.00 | 102 | 40.0 | 50 | 130 | 0 | 30 |
| O | 1N | 1-Nonene | U | 2.00 | | | | | | |
| P | C9 | Nonane | 18.1 S | 2.00 | 91 | 20.0 | 50 | 130 | 2 | 30 |
| A | STY | Styrene | U | 2.00 | | | | | | |
| A | OX | o-Xylene | 20.4 S | 2.00 | 102 | 20.0 | 50 | 130 | 0 | 30 |
| A | IPB | Isopropylbenzene | 19.5 S | 2.00 | 98 | 20.0 | 50 | 130 | 0 | 30 |
| A | PROPB | n-Propylbenzene | 20.3 S | 2.00 | 101 | 20.0 | 50 | 130 | 1 | 30 |
| A | 1M3EB | 1-Methyl-3-ethylbenzene | 19.4 S | 2.00 | 97 | 20.0 | 50 | 130 | 0 | 30 |
| A | 1M4EB | 1-Methyl-4-ethylbenzene | 19.6 S | 2.00 | 98 | 20.0 | 50 | 130 | 3 | 30 |
| A | 135TMB | 1,3,5-Trimethylbenzene | 20.2 S | 2.00 | 101 | 20.0 | 50 | 130 | 0 | 30 |
| O | 1D | 1-Decene | 20.0 S | 2.00 | 100 | 20.0 | 50 | 130 | 2 | 30 |
| A | 1M2EB | 1-Methyl-2-ethylbenzene | 20.3 S | 2.00 | 101 | 20.0 | 50 | 130 | 0 | 30 |
| P | C10 | Decane | 21.1 S | 2.00 | 105 | 20.0 | 50 | 130 | 2 | 30 |
| A | 124TMB | 1,2,4-Trimethylbenzene | 19.9 S | 2.00 | 99 | 20.0 | 50 | 130 | 1 | 30 |
| A | SECBUT | sec-Butylbenzene | 19.4 S | 2.00 | 97 | 20.0 | 50 | 130 | 1 | 30 |
| A | 1M3IPB | 1-Methyl-3-isopropylbenzene | U | 2.00 | | | | | | |
| A | 1M4IPB | 1-Methyl-4-isopropylbenzene | U | 2.00 | | | | | | |
| A | 1M2IPB | 1-Methyl-2-isopropylbenzene | U | 2.00 | | | | | | |
| A | IN | Indan | U | 2.00 | | | | | | |
| A | 1M3PB | 1-Methyl-3-propylbenzene | U | 2.00 | | | | | | |
| A | 1M4PB | 1-Methyl-4-propylbenzene | 19.8 S | 2.00 | 99 | 20.0 | 50 | 130 | 2 | 30 |
| A | BUTB | n-Butylbenzene | 20.8 S | 2.00 | 104 | 20.0 | 50 | 130 | 2 | 30 |
| A | 12DM4EB | 1,2-Dimethyl-4-ethylbenzene | U | 2.00 | | | | | | |
| A | 12DEB | 1,2-Diethylbenzene | 18.1 S | 2.00 | 91 | 20.0 | 50 | 130 | 2 | 30 |
| A | 1M2PB | 1-Methyl-2-propylbenzene | U | 2.00 | | | | | | |
| A | 14DM2EB | 1,4-Dimethyl-2-ethylbenzene | U | 2.00 | | | | | | |
| P | C11 | Undecane | 20.4 S | 2.00 | 102 | 20.0 | 50 | 130 | 2 | 30 |
| A | 13DM4EB | 1,3-Dimethyl-4-ethylbenzene | U | 2.00 | | | | | | |
| A | 13DM5EB | 1,3-Dimethyl-5-ethylbenzene | 19.2 | 2.00 | | | | | | |
| A | 13DM2EB | 1,3-Dimethyl-2-ethylbenzene | U | 2.00 | | | | | | |
| A | 12DM3EB | 1,2-Dimethyl-3-ethylbenzene | U | 2.00 | | | | | | |
| A | 1245TMP | 1,2,4,5-Tetramethylbenzene | U | 2.00 | | | | | | |
| A | PENTB | Pentylbenzene | 20.0 S | 2.00 | 100 | 20.0 | 50 | 130 | 2 | 30 |
| P | C12 | Dodecane | 23.3 S | 2.00 | 117 | 20.0 | 50 | 130 | 2 | 30 |
| 2 | N0 | Naphthalene | U | 2.00 | | | | | | |
| 2 | BT0 | Benzothiophene | U | 2.00 | | | | | | |
| ADD | MMT | MMT | U | 5.00 | | | | | | |
| P | C13 | Tridecane | U | 5.00 | | | | | | |
| A | 2MN | 2-Methylnaphthalene | U | 5.00 | | | | | | |
| A | 1MN | 1-Methylnaphthalene | U | 5.00 | | | | | | |

Surrogates (% Recovery)
 Dibromofluoromethane 86
 Toluene-d8 87
 4-Bromofluorobenzene 112

Project Name: GZA-642 Allens Ave
Project Number:

| | | |
|-------------------|---------------|---------------|
| Client ID | PRODUCT-12913 | PRODUCT-12913 |
| Lab ID | 1301009-01 | 1301009-01D |
| Matrix | Water | Water |
| Reference Method | PIANO | PIANO |
| Batch ID | VO013013B05 | VO013013B05 |
| Date Collected | 01/29/2013 | 01/29/2013 |
| Date Received | 01/29/2013 | 01/29/2013 |
| Date Prepped | 01/30/2013 | 01/30/2013 |
| Date Analyzed | 01/30/2013 | 01/30/2013 |
| Sample Size (wet) | 5 | 5 |
| % Solid | 100.00 | 100.00 |
| File ID | V6004887.D | V6004888.D |
| Units | µg/L | µg/L |
| Final Volume | 5 | 5 |
| Dilution | 1 | 1 |
| Reporting Limit | 2.00 | 2.00 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | RPD | RPD Limit |
|-------|--------|-----------------------------------|--------|--------|--------|--------|-----|-----------|
| I | IP | Isopentane | 1.89 | J 2.00 | 1.86 | J 2.00 | 1 | 30 |
| O | 1P | 1-Pentene | | U 2.00 | | U 2.00 | | 30 N/A |
| O | 2M1B | 2-Methyl-1-butene | | U 2.00 | | U 2.00 | | 30 N/A |
| P | C5 | Pentane | | U 2.00 | | U 2.00 | | 30 N/A |
| O | T2P | 2-Pentene (trans) | | U 2.00 | | U 2.00 | | 30 N/A |
| O | C2P | 2-Pentene (cis) | | U 2.00 | | U 2.00 | | 30 N/A |
| OX | TBA | Tertiary butanol | 5.65 | J 25.0 | 5.73 | J 25.0 | 1 | 30 |
| N | CYP | Cyclopentane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 23DMB | 2,3-Dimethylbutane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 2MP | 2-Methylpentane | | U 2.00 | | U 2.00 | | 30 N/A |
| OX | MTBE | MTBE | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 3MP | 3-Methylpentane | 0.151 | J 2.00 | 0.125 | J 2.00 | 19 | 30 |
| O | 1HEX | 1-Hexene | | U 2.00 | | U 2.00 | | 30 N/A |
| P | C6 | Hexane | | U 2.00 | | U 2.00 | | 30 N/A |
| OX | DIPE | Diisopropyl Ether (DIPE) | | U 2.00 | | U 2.00 | | 30 N/A |
| OX | ETBE | Ethyl Tertiary Butyl Ether (ETBE) | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 22DMP | 2,2-Dimethylpentane | | U 2.00 | | U 2.00 | | 30 N/A |
| N | MCYP | Methylcyclopentane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 24DMP | 2,4-Dimethylpentane | | U 2.00 | | U 2.00 | | 30 N/A |
| ADD | 12DCA | 1,2-Dichloroethane | | U 2.00 | | U 2.00 | | 30 N/A |
| N | CH | Cyclohexane | 0.526 | J 2.00 | 0.504 | J 2.00 | 4 | 30 |
| | | 2-Methylhexane | | U 2.00 | | U 2.00 | | 30 N/A |
| A | B | Benzene | 3.22 | J 2.00 | 3.20 | J 2.00 | 1 | 30 |
| I | 23DMP | 2,3-Dimethylpentane | | U 2.00 | | U 2.00 | | 30 N/A |
| S | THIO | Thiophene | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 3MH | 3-Methylhexane | | U 2.00 | | U 2.00 | | 30 N/A |
| OX | TAME | TAME | | U 2.00 | | U 2.00 | | 30 N/A |
| O | 1H | 1-Heptene/1,2-DMCP (trans) | | U 4.00 | | U 4.00 | | 30 N/A |
| I | ISO | Isooctane | | U 2.00 | | U 2.00 | | 30 N/A |
| P | C7 | Heptane | | U 2.00 | | U 2.00 | | 30 N/A |
| | | Methylcyclohexane | 0.206 | J 2.00 | 0.182 | J 2.00 | 12 | 30 |
| I | 25DMH | 2,5-Dimethylhexane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 24DMH | 2,4-Dimethylhexane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 223TMP | 2,2,3-Trimethylpentane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 234TMP | 2,3,4-Trimethylpentane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 233TMP | 2,3,3-Trimethylpentane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 23DMH | 2,3-Dimethylhexane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 3EH | 3-Ethylhexane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 2MHEP | 2-Methylheptane | | U 2.00 | | U 2.00 | | 30 N/A |
| I | 3MHEP | 3-Methylheptane | | U 2.00 | | U 2.00 | | 30 N/A |
| A | T | Toluene | 2.04 | J 2.00 | 1.98 | J 2.00 | 3 | 30 |
| S | 2MTHIO | 2-Methylthiophene | | U 2.00 | | U 2.00 | | 30 N/A |
| S | 3MTHIO | 3-Methylthiophene | | U 2.00 | | U 2.00 | | 30 N/A |
| O | 1O | 1-Octene | | U 2.00 | | U 2.00 | | 30 N/A |
| P | C8 | Octane | | U 2.00 | | U 2.00 | | 30 N/A |

Project Name: GZA-642 Allens Ave
Project Number:

| | PRODUCT-12913 | PRODUCT-12913 |
|-------------------|---------------|---------------|
| Client ID | | |
| Lab ID | 1301009-01 | 1301009-01D |
| Matrix | Water | Water |
| Reference Method | PIANO | PIANO |
| Batch ID | VO013013B05 | VO013013B05 |
| Date Collected | 01/29/2013 | 01/29/2013 |
| Date Received | 01/29/2013 | 01/29/2013 |
| Date Prepped | 01/30/2013 | 01/30/2013 |
| Date Analyzed | 01/30/2013 | 01/30/2013 |
| Sample Size (wet) | 5 | 5 |
| % Solid | 100.00 | 100.00 |
| File ID | V6004887.D | V6004888.D |
| Units | µg/L | µg/L |
| Final Volume | 5 | 5 |
| Dilution | 1 | 1 |
| Reporting Limit | 2.00 | 2.00 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | RPD | RPD Limit |
|-------|---------|-----------------------------|--------|---------|--------|---------|-----|-----------|
| ADD | 12DBE | 1,2-Dibromoethane | | U 2.00 | | U 2.00 | | 30 |
| A | EB | Ethylbenzene | 0.389 | J 2.00 | 0.403 | J 2.00 | 4 | 30 |
| S | 2ETHIO | 2-Ethylthiophene | | U 2.00 | | U 2.00 | | 30 |
| A | MPX | p/m-Xylene | 1.19 | J 4.00 | 1.23 | J 4.00 | 3 | 30 |
| O | 1N | 1-Nonene | | U 2.00 | | U 2.00 | | 30 |
| P | C9 | Nonane | | U 2.00 | | U 2.00 | | 30 |
| A | STY | Styrene | | U 2.00 | | U 2.00 | | 30 |
| A | OX | o-Xylene | 0.565 | J 2.00 | 0.609 | J 2.00 | 7 | 30 |
| A | IPB | Isopropylbenzene | | U 2.00 | | U 2.00 | | 30 |
| A | PROPB | n-Propylbenzene | | U 2.00 | | U 2.00 | | 30 |
| A | 1M3EB | 1-Methyl-3-ethylbenzene | 0.186 | J 2.00 | 0.173 | J 2.00 | 7 | 30 |
| A | 1M4EB | 1-Methyl-4-ethylbenzene | 0.184 | JB 2.00 | 0.194 | JB 2.00 | 5 | 30 |
| A | 135TMB | 1,3,5-Trimethylbenzene | 0.120 | J 2.00 | 0.143 | J 2.00 | 17 | 30 |
| O | 1D | 1-Decene | | U 2.00 | | U 2.00 | | 30 |
| A | 1M2EB | 1-Methyl-2-ethylbenzene | 0.273 | J 2.00 | 0.300 | J 2.00 | 9 | 30 |
| P | C10 | Decane | | U 2.00 | | U 2.00 | | 30 |
| A | 124TMB | 1,2,4-Trimethylbenzene | 0.446 | J 2.00 | 0.484 | J 2.00 | 8 | 30 |
| A | SECBUT | sec-Butylbenzene | | U 2.00 | | U 2.00 | | 30 |
| A | 1M3IPB | 1-Methyl-3-isopropylbenzene | | U 2.00 | | U 2.00 | | 30 |
| A | 1M4IPB | 1-Methyl-4-isopropylbenzene | | U 2.00 | | U 2.00 | | 30 |
| A | 1M2IPB | 1-Methyl-2-isopropylbenzene | | U 2.00 | | U 2.00 | | 30 |
| A | IN | Indan | 5.07 | 2.00 | 5.50 | 2.00 | 8 | 30 |
| A | 1M3PB | 1-Methyl-3-propylbenzene | | U 2.00 | 0.112 | JB 2.00 | | 30 |
| A | 1M4PB | 1-Methyl-4-propylbenzene | | U 2.00 | | U 2.00 | | 30 |
| A | BUTB | n-Butylbenzene | | U 2.00 | | U 2.00 | | 30 |
| A | 12DM4EB | 1,2-Dimethyl-4-ethylbenzene | 0.187 | JB 2.00 | 0.176 | JB 2.00 | 6 | 30 |
| A | 12DEB | 1,2-Diethylbenzene | 0.107 | J 2.00 | 0.124 | J 2.00 | 15 | 30 |
| A | 1M2PB | 1-Methyl-2-propylbenzene | 0.141 | JB 2.00 | 0.151 | JB 2.00 | 7 | 30 |
| A | 14DM2EB | 1,4-Dimethyl-2-ethylbenzene | 0.157 | JB 2.00 | 0.159 | JB 2.00 | 1 | 30 |
| P | C11 | Undecane | 0.126 | J 2.00 | | U 2.00 | | 30 |
| A | 13DM4EB | 1,3-Dimethyl-4-ethylbenzene | 0.175 | JB 2.00 | 0.190 | JB 2.00 | 8 | 30 |
| A | 13DM5EB | 1,3-Dimethyl-5-ethylbenzene | 0.402 | J 2.00 | 0.430 | J 2.00 | 7 | 30 |
| A | 13DM2EB | 1,3-Dimethyl-2-ethylbenzene | 0.274 | JB 2.00 | 0.295 | JB 2.00 | 7 | 30 |
| A | 12DM3EB | 1,2-Dimethyl-3-ethylbenzene | 0.237 | JB 2.00 | 0.263 | JB 2.00 | 10 | 30 |
| A | 1245TMP | 1,2,4,5-Tetramethylbenzene | 0.437 | JB 2.00 | 0.468 | JB 2.00 | 7 | 30 |
| A | PENTB | Pentylbenzene | | U 2.00 | | U 2.00 | | 30 |
| P | C12 | Dodecane | 0.401 | J 2.00 | 1.01 | J 2.00 | 86 | 30 |
| 2 | N0 | Naphthalene | 134 | 2.00 | 137 | 2.00 | 2 | 30 |
| 2 | BT0 | Benzothiophene | 3.74 | B 2.00 | 3.88 | B 2.00 | 4 | 30 |
| ADD | MMT | MMT | | U 5.00 | | U 5.00 | | 30 |
| P | C13 | Tridecane | 0.600 | J 5.00 | 0.886 | J 5.00 | 38 | 30 |
| A | 2MN | 2-Methylnaphthalene | 72.1 | 5.00 | 75.2 | 5.00 | 4 | 30 |
| A | 1MN | 1-Methylnaphthalene | 42.0 | 5.00 | 43.8 | 5.00 | 4 | 30 |

| Surrogates (% Recovery) | | |
|-------------------------|-----|-----|
| Dibromofluoromethane | 91 | 90 |
| Toluene-d8 | 85 | 86 |
| 4-Bromofluorobenzene | 112 | 111 |

Project Name: GZA-642 Allens Ave
 Project Number:

Client ID Gasoline Reference Oil - LD-7
 Lab ID VO013013LD701
 Matrix Oil
 Reference Method PIANO High
 Batch ID N/A
 Date Collected N/A
 Date Received N/A
 Date Prepped 01/30/2013
 Date Analyzed 01/30/2013
 Sample Size (wet) 0.1049
 % Solid 100.00
 File ID V6004884.D
 Units mg/Kg
 Final Volume 5
 Dilution 100
 Reporting Limit 953

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|-----------------------------------|--------|-------|-------|-------------|-------------|-------------|
| I | IP | Isopentane | 30000 | 953 | 96 | 31223.00 | 65 | 135 |
| O | 1P | 1-Pentene | U | 953 | | | | |
| O | 2M1B | 2-Methyl-1-butene | U | 953 | | | | |
| P | C5 | Pentane | 27100 | 953 | 101 | 26748.00 | 65 | 135 |
| O | T2P | 2-Pentene (trans) | 321 | J 953 | | | | |
| O | C2P | 2-Pentene (cis) | 135 | J 953 | | | | |
| OX | TBA | Tertiary butanol | U | 11900 | | | | |
| N | CYP | Cyclopentane | 4040 | 953 | 99 | 4090.00 | 65 | 135 |
| I | 23DMB | 2,3-Dimethylbutane | 8060 | 953 | 95 | 8480.00 | 65 | 135 |
| I | 2MP | 2-Methylpentane | 30000 | 953 | 89 | 33695.00 | 65 | 135 |
| OX | MTBE | MTBE | U | 953 | | | | |
| I | 3MP | 3-Methylpentane | 18900 | 953 | 91 | 20693.00 | 65 | 135 |
| O | 1HEX | 1-Hexene | U | 953 | | | | |
| P | C6 | Hexane | 29700 | 953 | 95 | 31248.00 | 65 | 135 |
| OX | DIPE | Diisopropyl Ether (DIPE) | U | 953 | | | | |
| OX | ETBE | Ethyl Tertiary Butyl Ether (ETBE) | U | 953 | | | | |
| I | 22DMP | 2,2-Dimethylpentane | 3660 | 953 | 93 | 3933.00 | 65 | 135 |
| N | MCYP | Methylcyclopentane | 24700 | 953 | 90 | 27356.00 | 65 | 135 |
| I | 24DMP | 2,4-Dimethylpentane | 5330 | 953 | 94 | 5652.00 | 65 | 135 |
| ADD | 12DCA | 1,2-Dichloroethane | U | 953 | | | | |
| N | CH | Cyclohexane | 42600 | 953 | 96 | 44344.00 | 65 | 135 |
| | | 2-Methylhexane | 19100 | 953 | 96 | 19898.00 | 65 | 135 |
| A | B | Benzene | 3400 | 953 | 100 | 3408.00 | 65 | 135 |
| I | 23DMP | 2,3-Dimethylpentane | 7300 | 953 | 99 | 7333.00 | 65 | 135 |
| S | THIO | Thiophene | U | 953 | | | | |
| I | 3MH | 3-Methylhexane | 18500 | 953 | 93 | 19898.00 | 65 | 135 |
| OX | TAME | TAME | U | 953 | | | | |
| O | 1H | 1-Heptene/1,2-DMCP (trans) | 13000 | 1910 | 96 | 13444.00 | 65 | 135 |
| I | ISO | Isooctane | 12400 | 953 | 97 | 12819.00 | 65 | 135 |
| P | C7 | Heptane | 32300 | 953 | 96 | 33718.00 | 65 | 135 |
| | | Methylcyclohexane | 98600 | 953 | 99 | 99570.00 | 65 | 135 |
| I | 25DMH | 2,5-Dimethylhexane | 4800 | 953 | 98 | 4910.00 | 65 | 135 |
| I | 24DMH | 2,4-Dimethylhexane | 5830 | 953 | 94 | 6202.00 | 65 | 135 |
| I | 223TMP | 2,2,3-Trimethylpentane | 718 | J 953 | | | | |
| I | 234TMP | 2,3,4-Trimethylpentane | 4740 | 953 | 97 | 4894.00 | 65 | 135 |
| I | 233TMP | 2,3,3-Trimethylpentane | 3000 | 953 | 96 | 3110.00 | 65 | 135 |
| I | 23DMH | 2,3-Dimethylhexane | 4670 | 953 | 99 | 4700.00 | 65 | 135 |
| I | 3EH | 3-Ethylhexane | 2460 | 953 | 114 | 2163.00 | 65 | 135 |
| I | 2MHHEP | 2-Methylheptane | 16300 | 953 | 96 | 16966.00 | 65 | 135 |
| I | 3MHHEP | 3-Methylheptane | 12800 | 953 | 92 | 13911.00 | 65 | 135 |
| A | T | Toluene | 2380 | 953 | 99 | 2400.00 | 65 | 135 |
| S | 2MTHIO | 2-Methylthiophene | U | 953 | | | | |
| S | 3MTHIO | 3-Methylthiophene | U | 953 | | | | |
| O | 1O | 1-Octene | U | 953 | | | | |
| P | C8 | Octane | 32100 | 953 | 101 | 31798.00 | 65 | 135 |

Project Name: GZA-642 Allens Ave
 Project Number:

Client ID Gasoline Reference Oil - LD-7
 Lab ID VO013013LD701
 Matrix Oil
 Reference Method PIANO High
 Batch ID N/A
 Date Collected N/A
 Date Received N/A
 Date Prepped 01/30/2013
 Date Analyzed 01/30/2013
 Sample Size (wet) 0.1049
 % Solid 100.00
 File ID V6004884.D
 Units mg/Kg
 Final Volume 5
 Dilution 100
 Reporting Limit 953

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|---------|-----------------------------|--------|--------|-------|-------------|-------------|-------------|
| ADD | 12DBE | 1,2-Dibromoethane | | U 953 | | | | |
| A | EB | Ethylbenzene | 5670 | 953 | 101 | 5610.00 | 65 | 135 |
| S | 2ETHIO | 2-Ethylthiophene | | U 953 | | | | |
| A | MPX | p/m-Xylene | 17600 | 1910 | 102 | 17224.00 | 65 | 135 |
| O | 1N | 1-Nonene | | U 953 | | | | |
| P | C9 | Nonane | 26000 | 953 | 112 | 23088.00 | 65 | 135 |
| A | STY | Styrene | | U 953 | | | | |
| A | OX | o-Xylene | 7150 | 953 | 101 | 7075.00 | 65 | 135 |
| A | IPB | Isopropylbenzene | 1160 | 953 | 98 | 1184.00 | 65 | 135 |
| A | PROPB | n-Propylbenzene | 1600 | 953 | 103 | 1555.00 | 65 | 135 |
| A | 1M3EB | 1-Methyl-3-ethylbenzene | 4450 | 953 | 94 | 4712.00 | 65 | 135 |
| A | 1M4EB | 1-Methyl-4-ethylbenzene | 2090 | 953 | 101 | 2069.00 | 65 | 135 |
| A | 135TMB | 1,3,5-Trimethylbenzene | 4910 | 953 | 98 | 4982.00 | 65 | 135 |
| O | 1D | 1-Decene | | U 953 | | | | |
| A | 1M2EB | 1-Methyl-2-ethylbenzene | 1860 | 953 | 101 | 1844.00 | 65 | 135 |
| P | C10 | Decane | 15100 | 953 | 102 | 14859.00 | 65 | 135 |
| A | 124TMB | 1,2,4-Trimethylbenzene | 9290 | 953 | 99 | 9407.00 | 65 | 135 |
| A | SECBUT | sec-Butylbenzene | 360 | J 953 | | | | |
| A | 1M3IPB | 1-Methyl-3-isopropylbenzene | 584 | J 953 | | | | |
| A | 1M4IPB | 1-Methyl-4-isopropylbenzene | 355 | J 953 | | | | |
| A | 1M2IPB | 1-Methyl-2-isopropylbenzene | 154 | J 953 | | | | |
| A | IN | Indan | 828 | J 953 | | | | |
| A | 1M3PB | 1-Methyl-3-propylbenzene | 1270 | 953 | 101 | 1255.00 | 65 | 135 |
| A | 1M4PB | 1-Methyl-4-propylbenzene | 625 | J 953 | | | | |
| A | BUTB | n-Butylbenzene | 480 | J 953 | | | | |
| A | 12DM4EB | 1,2-Dimethyl-4-ethylbenzene | 1470 | 953 | 94 | 1559.00 | 65 | 135 |
| A | 12DEB | 1,2-Diethylbenzene | 222 | J 953 | | | | |
| A | 1M2PB | 1-Methyl-2-propylbenzene | 493 | J 953 | | | | |
| A | 14DM2EB | 1,4-Dimethyl-2-ethylbenzene | 901 | J 953 | | | | |
| P | C11 | Undecane | 4300 | 953 | 109 | 3952.00 | 65 | 135 |
| A | 13DM4EB | 1,3-Dimethyl-4-ethylbenzene | 962 | 953 | | | | |
| A | 13DM5EB | 1,3-Dimethyl-5-ethylbenzene | 1610 | 953 | 98 | 1642.00 | 65 | 135 |
| A | 13DM2EB | 1,3-Dimethyl-2-ethylbenzene | 189 | J 953 | | | | |
| A | 12DM3EB | 1,2-Dimethyl-3-ethylbenzene | 498 | J 953 | | | | |
| A | 1245TMP | 1,2,4,5-Tetramethylbenzene | 1360 | 953 | 92 | 1477.00 | 65 | 135 |
| A | PENTB | Pentylbenzene | 352 | J 953 | | | | |
| P | C12 | Dodecane | 2600 | 953 | 107 | 2437.00 | 65 | 135 |
| 2 | N0 | Naphthalene | 9590 | 953 | 121 | 7917.00 | 65 | 135 |
| 2 | BT0 | Benzothiophene | | U 953 | | | | |
| ADD | MMT | MMT | | U 2380 | | | | |
| P | C13 | Tridecane | 866 | J 2380 | | | | |
| A | 2MN | 2-Methylnaphthalene | 10300 | 2380 | 130 | 7963.00 | 65 | 135 |
| A | 1MN | 1-Methylnaphthalene | 5430 | 2380 | 124 | 4383.00 | 65 | 135 |

Surrogates (% Recovery)
 Dibromofluoromethane 82
 Toluene-d8 86
 4-Bromofluorobenzene 112

U: The analyte was analyzed for but not detected at the sample specific level reported
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
#: Value outside of QC Limits.
\$: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
x: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDI
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
\$: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

Lead Data

March 21, 2013

Ms. Margaret Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, Rhode Island 02909

Subject: Chemical Fingerprinting at 642 Allens Avenue, Providence, Rhode Island

Dear Ms. Kilpatrick,

This letter report summarizes the results of a forensic chemical analysis conducted on a wipe sample identified as MH-1 that was collected from a manhole at National Grid's facility located at 642 Allens Avenue in Providence, Rhode Island. The objective of this study was to determine the composition of the product collected on the wipe sample.

Sampling and Analysis

One wipe sample was collected in duplicate on December 5, 2012 and was packed on ice and shipped overnight by Federal Express to NewFields' alliance laboratory, Alpha Analytical Laboratory (Alpha) for chemical fingerprinting analysis. Also included in the shipment was an unused wipe (3M Pad). Upon receipt, the samples were logged into Alpha's laboratory information management system (LIMS) and given unique laboratory identifications. The samples were stored in a limited access refrigerator at 4°C until processed for analysis. Summary information of the samples collected is provided below. Chain-of-custody documentation is provided in Attachment 1.

| Client ID | Lab ID | Matrix | Date Collected | Date Received |
|-----------|------------|--------|----------------|---------------|
| MH-1 | 1212011-01 | Wipe | 5-Dec-12 | 6-Dec-12 |
| 3M PAD BD | 1212011-02 | Wipe | 5-Dec-12 | 6-Dec-12 |

The samples were prepared and analyzed for gas chromatography hydrocarbon "fingerprints" and supplemented with quantitative measurements of an extended list of PAH compounds using methods specifically tailored for the forensic analysis of hydrocarbons¹. The principal methods of analysis included:

- (1) *TPH and Gas Chromatographic "Fingerprints"*: a modified EPA Method 8015B gas chromatography method was used to determine the total petroleum hydrocarbon (TPH) concentrations over the C₉-C₄₄ molecular weight range. A high resolution gas chromatogram was also developed during this analysis. Such chromatograms provide an important qualitative depiction of the boiling range and general type(s) of hydrocarbons that compose samples, i.e., petroleum products, combustion products, plant waxes, etc.

¹ Douglas, G.D., Emsbo-Mattingly, S.D., Stout, S.A., Uhler, A.D., and McCarthy, K.J. (2007) Chemical fingerprinting of hydrocarbons and polychlorinated biphenyls. In: *Introduction to Environmental Forensics, 2nd Ed.*, B. Murphy and R. Morrison, Eds., Academic Press, New York, pp. 317-459.



- (2) *Extended PAH Analysis*: a modified EPA Method 8270C gas chromatography/mass spectrometry (GC/MS-SIM) method was used to measure the concentrations of 2- through 6-ring parent (unsubstituted) and C₁-C₄ alkylated PAH and related sulfur-containing poly aromatic compounds. These compounds provide specific information regarding the origin/source of PAHs and type(s) of hydrocarbons found in the samples. Tables 1 lists the PAH compounds measured, and provides compound abbreviations used in graphical presentation of the PAH data.

Results and Discussion

The complete Alpha Environmental Testing Report (ETR) including all sample preparation data, instrument calibrations, QC data and chromatograms is maintained on file by NewFields (ETR 1212011). A data summary containing pertinent gas chromatograms and tabulated results of all chemical analyses and quality control results may be found as Attachment 1 to this letter.

All analyses were conducted following established laboratory data quality objectives (DQOs). Appropriate laboratory quality control (QC) samples were processed along with the samples. The QC samples included laboratory method blank (B), laboratory control samples (LCS/LCSD), sample duplicate (D), and a reference materials oil. Resulting data underwent several levels of review. NewFields performed an independent review of the data generated by Alpha Laboratory, to ensure that data quality objectives were satisfied, and that the results were traceable to the raw data. NewFields also reviewed the data for compliance with the laboratory's documented procedures and established laboratory quality objectives. The data were found to be accurate and traceable, and met laboratory established method data quality objectives.

Forensic Analysis

The gas chromatogram, or "fingerprint", is the instrument output that defines the distribution of the petroleum hydrocarbons in each sample usually from most volatile to least volatile². The peaks that appear in the chromatogram represent discrete compounds, the height of which is proportional to the abundance of those compounds in the petroleum. Every petroleum product has its own unique distribution of peaks (individual hydrocarbons). It is this fundamental gas chromatographic feature – the GC "fingerprint" – that allows the environmental chemist to identify and distinguish one petroleum product from another.

More detailed measurements of the petroleum residues in samples are obtained from gas chromatography/mass spectrometry (GC/MS) data. Measurements of individual hydrocarbon chemicals – particularly polycyclic aromatic hydrocarbons (PAH) – provide specific information about hydrocarbon contamination found in samples.³ The distribution patterns within a given homologous group of PAH provide a useful tool for hydrocarbon fingerprinting. Petrogenic (petroleum-derived) products exhibit PAH homolog patterns where compounds with C₂- and C₃-alkylated PAH are more abundant than the

² The elution order (e.g. retention time) of peaks on the chromatogram is a function of volatility with the most volatile compounds eluting early in the GC run (e.g., n-C₁₀), and the less volatile hydrocarbons eluting later in the GC run (e.g., n-C₃₀).

³ Stout, S.A., Uhler, A.D., McCarthy, K.J. and Emsbo-Mattingly, S.D. (2002) Chemical Fingerprinting of Hydrocarbons. In: *Introduction to Environmental Forensics*, B. Murphy and R. Morrison, Eds., Academic Press, New York, p. 135-260.



parent (non-alkylated) PAH. The resulting PAH profile is “bell-shaped”. Combustion-derived (pyrogenic) materials exhibit PAH profiles in which the parent PAH is most abundant, and there is an inverse relationship between relative abundance and alkylation level (i.e., $C_0 > C_1 > C_2 > C_3 > C_4$). The resulting PAH profile is “skewed” or “sloped”. These distinctive PAH homologue distributions are among the fundamental chemical features used to distinguish petrogenic versus pyrogenic PAH sources in environmental media.

Compositional Features.

The GC/FID fingerprint of wipe sample MH-1 is presented in Figure 1. For reference purposes, the fingerprint of the unused wipe sample 3M PAD BD is presented in Figure 2. The GC chromatogram of MH-1 is composed of a bimodal unresolved complex mixture (UCM: a mixture of hundreds of hydrocarbon chemicals that are unresolved by gas chromatography which appear as a broad “hump” in the chromatogram) over the approximate C_9 to C_{44} range, superimposed a series of unidentified resolved peaks. The small but notable UCM present in MH-1 in the C_{10} to C_{25} diesel range is absent in the unused wipe sample 3M PAD BD.

Wipe sample MH-1 contains PAH derived from urban background, which collectively refers to PAH from a variety of point and non-point sources such as (1) stormwater runoff; (2) direct deposition (atmospheric fallout) of combustion particles (soot) from vehicle exhaust and factories; (3) surface runoff from proximal roadways, parking lots, and bridges; or (4) discharges from recreational, commercial, and military boat/ship traffic.⁴ The distribution of PAH compounds found in the wipe sample MH-1 is shown in Figure 3. For comparison purposes, the PAH distribution profile of the unused wipe sample 3M PAD BD is presented in Figure 4. Wipe sample MH-1 contains a full suite of 2-, 3-, 4-, 5- and 6-ring PAH. The PAH distribution profile is a mixture of petrogenic and pyrogenic patterns as characterized by the “bell-shaped” alkyl homologue distributions of the fluorene and dibenzothiophene series and the abundance of high molecular weight PAH (HPAH) with the 4- and 5-rings homologous series (i.e., fluoranthene/pyrene and chrysene series) demonstrating decreasing abundance with increasing level of alkylation, or a downward slope. Using the algorithm of Stout et al.,⁵ the PAH composition of MH-1 is calculated to be 52% petrogenic PAH, and 48% pyrogenic PAH.

Please do not hesitate to contact me if you have any questions regarding this letter.

Sincerely,

Kerylynn Krahforst
Staff Scientist

Attachment 1: Data Deliverable

⁴ Eagenhouse, R., Blumfeld, P., Kaplan, I. (1982). Petroleum hydrocarbons in stormwater runoff and municipal wastes: input to coastal waters and fate in marine sediments. *Thalassia Jugoslavica* 18:411-431.

⁵ Stout, S.A., Uhler, A.D., and Emsbo-Mattingly, S.D. (2004). Comparative evaluation of background anthropogenic hydrocarbons in surficial sediments from nine urban waterways. *Environ. Sci. Technol.* 38: 2897-2994.



Table 1. Polycyclic Aromatic and Related Heterocyclic Target Analytes^a

| Abbr. | Category^a | Compound | Abbr. | Category^b | Compound |
|--------------|-----------------------------|------------------------------|--------------|-----------------------------|--|
| D0 | petro | cis/trans-Decalin | FLO | pyro | Fluoranthene |
| D1 | petro | C1-Decalins | PY0 | pyro | Pyrene |
| D2 | petro | C2-Decalins | FP1 | pyro | C1-Fluoranthenes/Pyrenes |
| D3 | petro | C3-Decalins | FP2 | petro | C2-Fluoranthenes/Pyrenes |
| D4 | petro | C4-Decalins | FP3 | petro | C3-Fluoranthenes/Pyrenes |
| BT0 | petro | Benzothiophene | FP4 | petro | C4-Fluoranthenes/Pyrenes |
| BT1 | petro | C1-Benzo(b)thiophenes | NBT0 | pyro | Naphthobenzothiophenes |
| BT2 | petro | C2-Benzo(b)thiophenes | NBT1 | pyro | C1-Naphthobenzothiophenes |
| BT3 | petro | C3-Benzo(b)thiophenes | NBT2 | petro | C2-Naphthobenzothiophenes |
| BT4 | petro | C4-Benzo(b)thiophenes | NBT3 | petro | C3-Naphthobenzothiophenes |
| N0 | petro | Naphthalene | NBT4 | petro | C4-Naphthobenzothiophenes |
| N1 | petro | C1-Naphthalenes | BA0 | pyro | Benz[a]anthracene |
| N2 | petro | C2-Naphthalenes | C0 | pyro | Chrysene/Triphenylene |
| N3 | petro | C3-Naphthalenes | BC1 | pyro | C1-Chrysenes |
| N4 | petro | C4-Naphthalenes | BC2 | petro | C2-Chrysenes |
| B | petro | Biphenyl | BC3 | petro | C3-Chrysenes |
| DF | petro | Dibenzofuran | BC4 | petro | C4-Chrysenes |
| AY | petro | Acenaphthylene | BBF | pyro | Benzo[b]fluoranthene |
| AE | petro | Acenaphthene | BJKF | pyro | Benzo[k]fluoranthene/Benzo[j]fluoranthene |
| F0 | petro | Fluorene | BAF | pyro | Benzo[a]fluoranthene |
| F1 | petro | C1-Fluorenes | BEP | pyro | Benzo[e]pyrene |
| F2 | petro | C2-Fluorenes | BAP | pyro | Benzo[a]pyrene |
| F3 | petro | C3-Fluorenes | PER | bio | Perylene |
| A0 | pyro | Anthracene | IND | pyro | Indeno[1,2,3-cd]pyrene |
| P0 | mixed | Phenanthrene | DA | pyro | Dibenz[a,h]anthracene/Dibenz[a,c]anthracene |
| PA1 | mixed | C1-Phenanthrenes/Anthracenes | GHI | pyro | Benzo[g,h,i]perylene |
| PA2 | petro | C2-Phenanthrenes/Anthracenes | CAR | pyro | Carbazole |
| PA3 | petro | C3-Phenanthrenes/Anthracenes | 4MDT | petro | 4-Methyl dibenzothiophene |
| PA4 | petro | C4-Phenanthrenes/Anthracenes | 2MDT | petro | 2/3-Methyl dibenzothiophene |
| RET | bio | Retene | 1MDT | petro | 1-Methyl dibenzothiophene |
| DBT0 | petro | Dibenzothiophene | 3MP | petro | 3-Methylphenanthrene |
| DBT1 | petro | C1-Dibenzothiophenes | 2MP | petro | 2/4-Methylphenanthrene |
| DBT2 | petro | C2-Dibenzothiophenes | 2MA | petro | 2-Methylanthracene |
| DBT3 | petro | C3-Dibenzothiophenes | 9MP | petro | 9-Methylphenanthrene |
| DBT4 | petro | C4-Dibenzothiophenes | 1MP | petro | 1-Methylphenanthrene |
| BF | petro | Benzo(b)fluorene | | | |

^aUS EPA Priority Pollutant PAH compounds listed in bold.

^bPAH classification based on Stout et al., 2004.

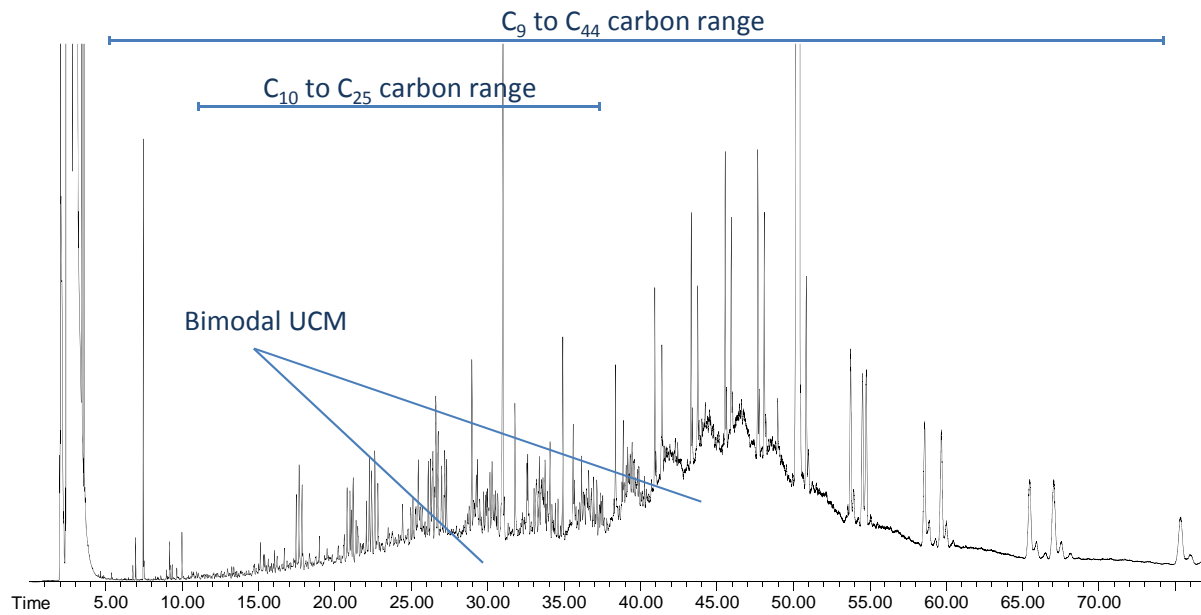


Figure 1. GC/FID Chromatogram of MH-1

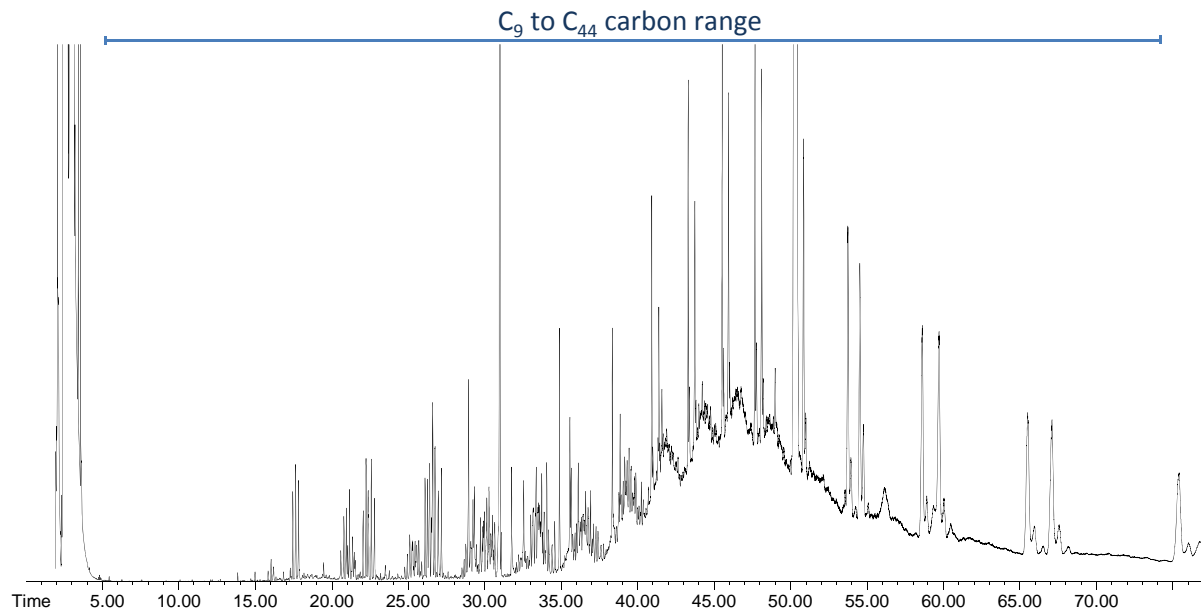


Figure 2. GC/FID Chromatogram of 3M PAD BD

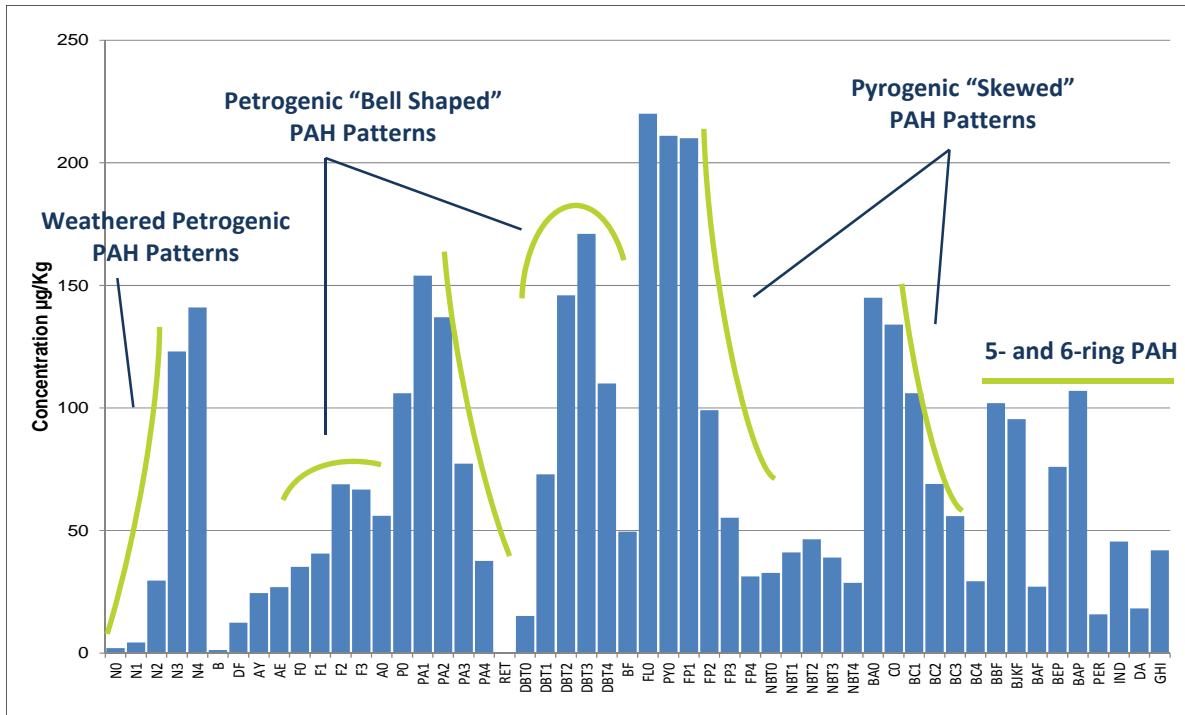


Figure 3. PAH Profile of MH-1

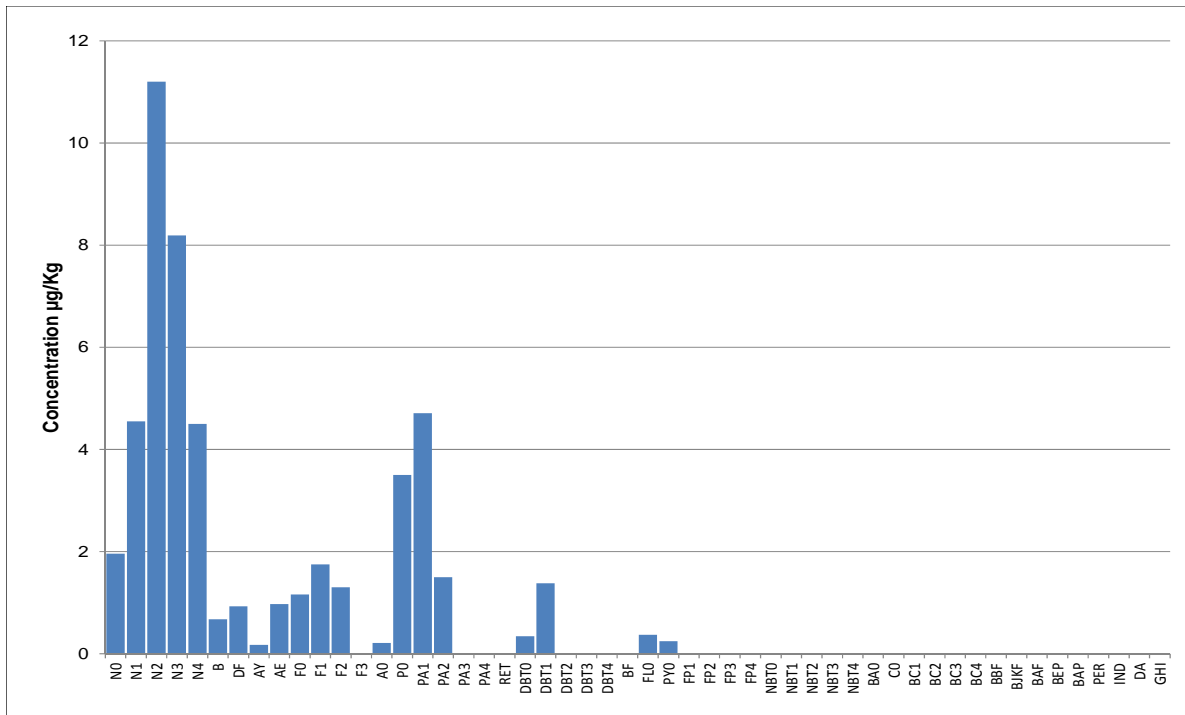


Figure 4. PAH Profile of 3M PAD BD

Attachment 1



GZA GeoEnvironmental, Inc.

Chemical Fingerprinting at 642 Allens Avenue, Providence, Rhode Island

March 2013

Chain of Custody



Environmental Forensics Practice LLC

Chain of Custody

12/20/11

| Proj. No 33554 | | Proj. Name 642 ALLENS AVENUE | | | | | | | | | | | | | |
|--|-----------|------------------------------|-------|-----------------------|-----------|--|-------------------------|------------------|----------------|-----------------|-----------|--|--------|-----|------------|
| SAMPLERS: Signature <i>Sophie Markiewicz</i> | | | | | | ANALYSIS REQUESTED → "NUMBER OF CONTAINERS" | | | | | | | | | |
| LAB ID | CLIENT ID | DATE | TIME | TOTAL # OF CONTAINERS | PRESERVED | SAMPLE DESCRIPTION | MATRIX (Oil/Soil/Water) | GC-FID-TPH (Cat) | GCMS-Alkyl PAH | GCMS-Biomarkers | PIANO-VOA | Organic Lead | METALS | PCB | Pesticides |
| 01 | MH-1 | 12/5/12 | 15:30 | 1 | - | BLEB SAMPLE ON 3M PAD | | ✓ | | | | | | | |
| ↓ | MH-1 BD | 12/5/12 | 15:30 | 1 | - | BLEB SAMPLE ON 3M PAD | | ✓ | | | | | | | |
| 02 | 3M PAD BD | 12/5/12 | 15:30 | 1 | - | 3M PAD | | ✓ | | | | | | | |
| | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |
| Relinquished by: | | | | Date | Time | Received by: <i>Fed Ex</i> | | | | Date | Time | | | | |
| Relinquished by: <i>Fed Ex</i> | | | | Date | Time | Received by: <i>[Signature]</i> | | | | Date | Time | | | | |
| Relinquished by: | | | | Date | Time | Received by: | | | | Date | Time | | | | |
| Comments: Samples to be shipped to: Alpha Analytical-Woods Hole Lab 320 Forbes Blvd. Mansfield, MA 02048 Tel: (508) 822-9300 Attn: Liz Porta | | | | | | | | | | | | PLEASE NOTIFY WHEN RECEIVED <i>Soph.a.markiewicz@qa.com</i> | | | |



Sample Delivery Group Form

Laboratory Job No: 1212011
Receipt Date/Time: 12/6/12 10:00

Client: Newfire
SDG Reviewer: KL

Samples Delivered By:

Alpha Courier Client UPS FedEx Other _____
Bill of Laden: Yes Unavailable Tracking #: Attach to CA

Chain of Custody: Present Absent: _____
Custody Seals: Absent Present/Intact Present/Broken

Cooler/Sample Temperature:

Is Ice/Blue Ice present? Yes No N/A _____

Temp taken from: Temp Blank: (a) _____ (b) _____ (c) _____ (d) _____ (e) _____
IR Gun: (a) 22.3°C (b) _____ (c) _____ (d) _____ (e) _____
IR Gun SN (circle one): 090512810 100311463
Was Temp: 2-6 Celsius
 <2 Celsius ... were samples frozen upon receipt? Yes No
 >6 Celsius ... were samples delivered direct from site? Yes No

Containers Received: Intact
 Broken/Leaking Sample IDs: _____
Sample IDs: _____

All Containers Accounted For? Yes No: No container rec'd labeled MH-1 BD
Extra Samples Received? No Yes: Extra container rec'd labeled MH-1
Do Sample Labels and COC agree? Yes No: _____

Are Samples in Appropriate Containers? Yes No: _____
Are samples rec'd within holding time? Yes No: _____

* Please note: the analysis of pH will always be performed beyond the regulatory-required holding time of 15 min. from the time of collection.

pH of samples upon receipt: N/A <2 >12 and/or _____
Are samples properly preserved? Yes No If No then.....
Initial pH= _____ preserved In-House with HCL H₂SO₄ HNO₃ NaOH <<Final pH = _____ >>
Other Issues: _____
Chlorine Check: N/A Present Absent

VOA/VPH vials: Yes No Preserved? Yes No If yes: HCL, _____
Aqueous: vials contain head space? No Yes: _____
Soils: MeOH covering soil? Yes No: _____
Reagent H₂O Preserved vials Frozen @ date/time: _____
Frozen by Client? No Yes @ date/time: _____

Was Client notified of any discrepancies listed above? Yes No N/A

If Yes: Call Tracker # _____
Form No.: 101-12

Alpha Analytical
Mansfield, MA

06/15/2011

From: (401) 421-4140
Paula McGrady
GZA GeoEnvironmental, Inc.
530 Broadway

Origin ID: PVDA



J12201209200325

Ship Date: 05DEC12
Acct Wgt: 2.0 LB
CAD: 5157940/INET3300

Dims: 10 X 8 X 6 IN

Delivery Address Bar Code



SHIP TO: (401) 421-4140
Susan O'Neil, Project Manager
Alpha Analytical
320 FORBES BLVD

BILL SENDER

Ref # 33554.00 TK 21
Invoice #
PO #
Dept #

MANSFIELD, MA 02048

THU - 06 DEC A4
PRIORITY OVERNIGHT

TRK# 7942 2906 7372

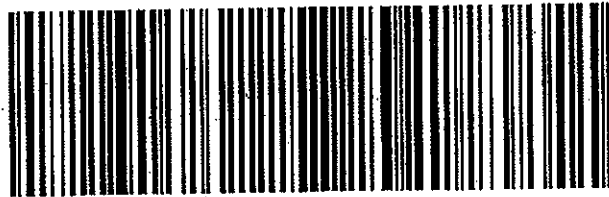
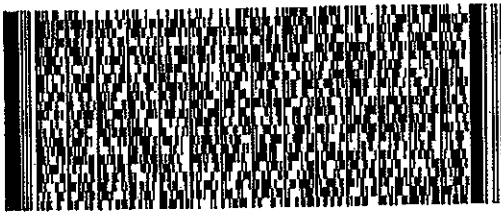
0201

02048

MA-US

BOS

01 WBNA

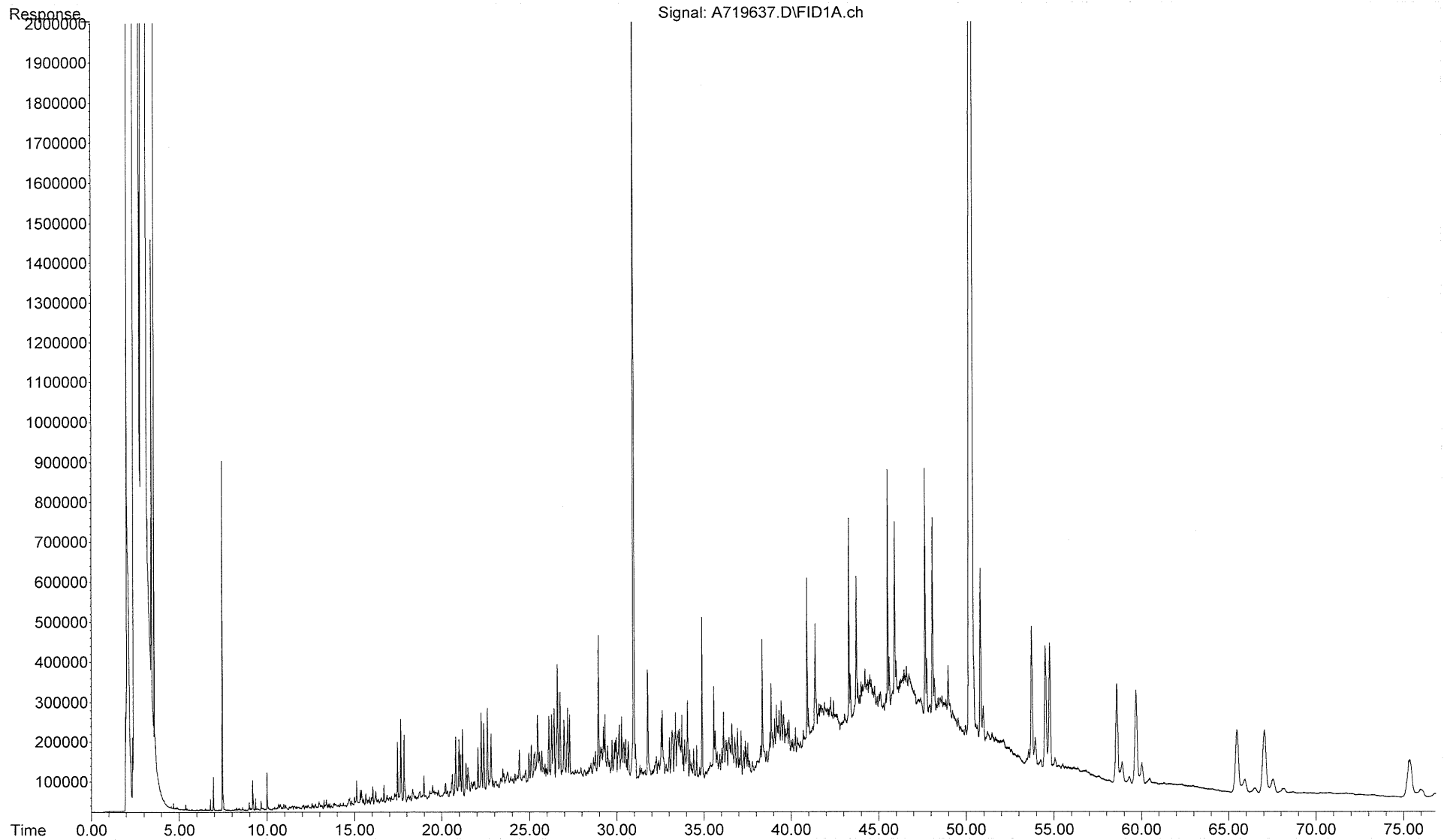


515G1/82R3/AA44

GC/FID Chromatograms

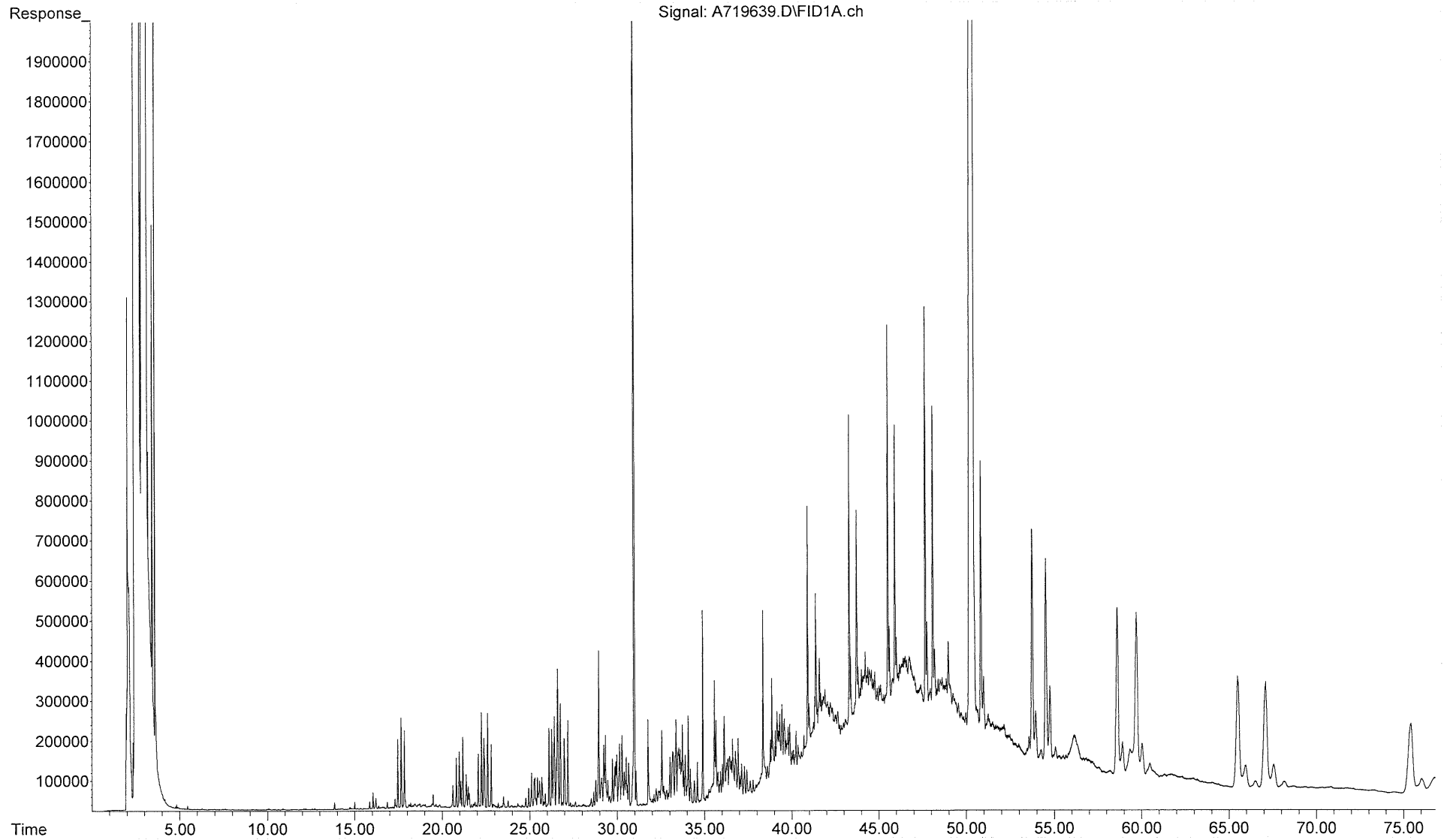
File :X:\nfef_whg\2012 AWHL Data\GZA 642 Allens Ave\1212011\FID\A7
... 19637.D
Operator : JT
Instrument : FID 7
Acquired : 19 Dec 2012 2:32 am using AcqMethod FID7.M
Sample Name: 1212011-01
Misc Info : 1X

MH-1
1212011-01



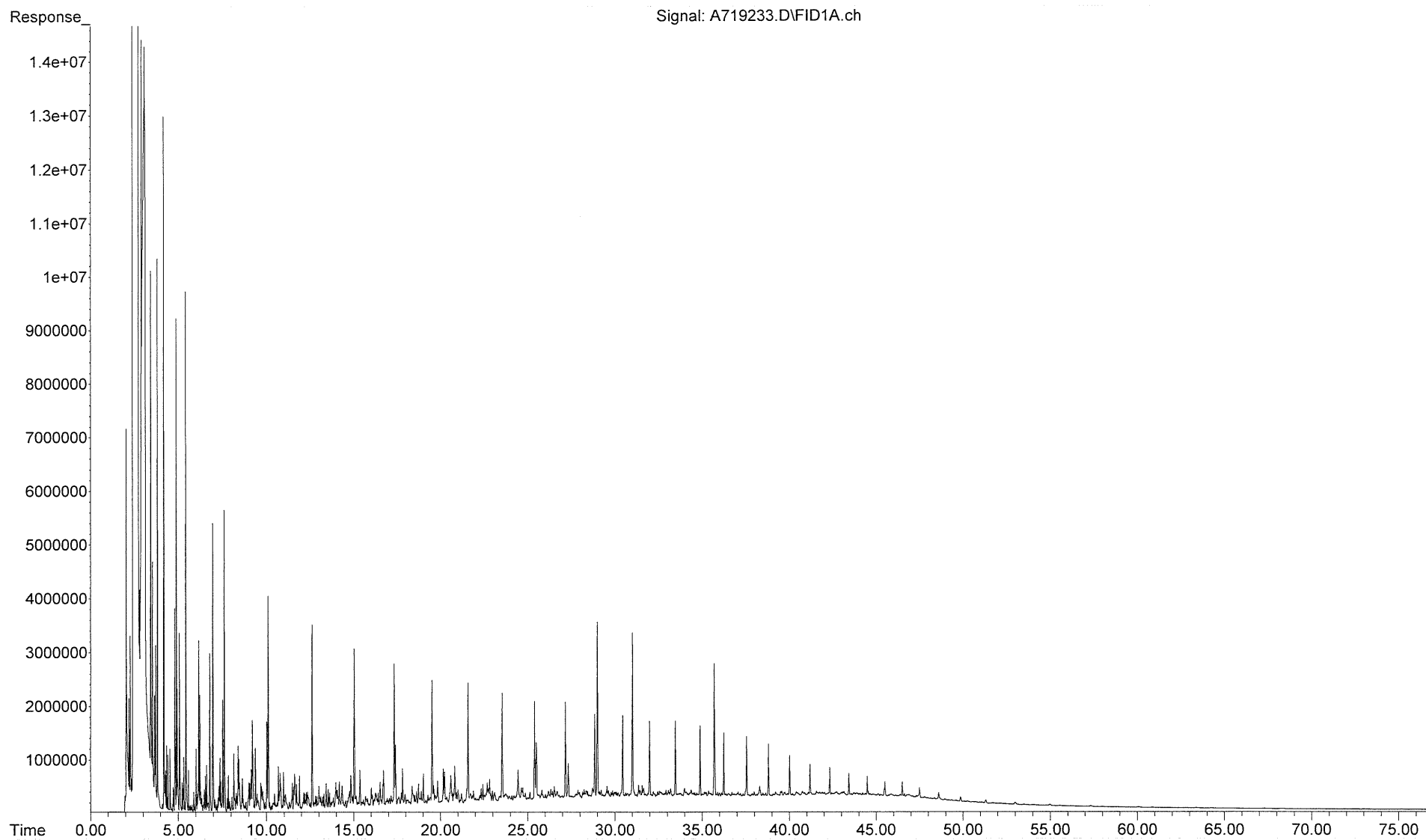
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... 19639.D
Operator : JT
Instrument : FID 7
Acquired : 19 Dec 2012 3:56 am using AcqMethod FID7.M
Sample Name: 1212011-02
Misc Info : 1X

3M PAD BD
1212011-02



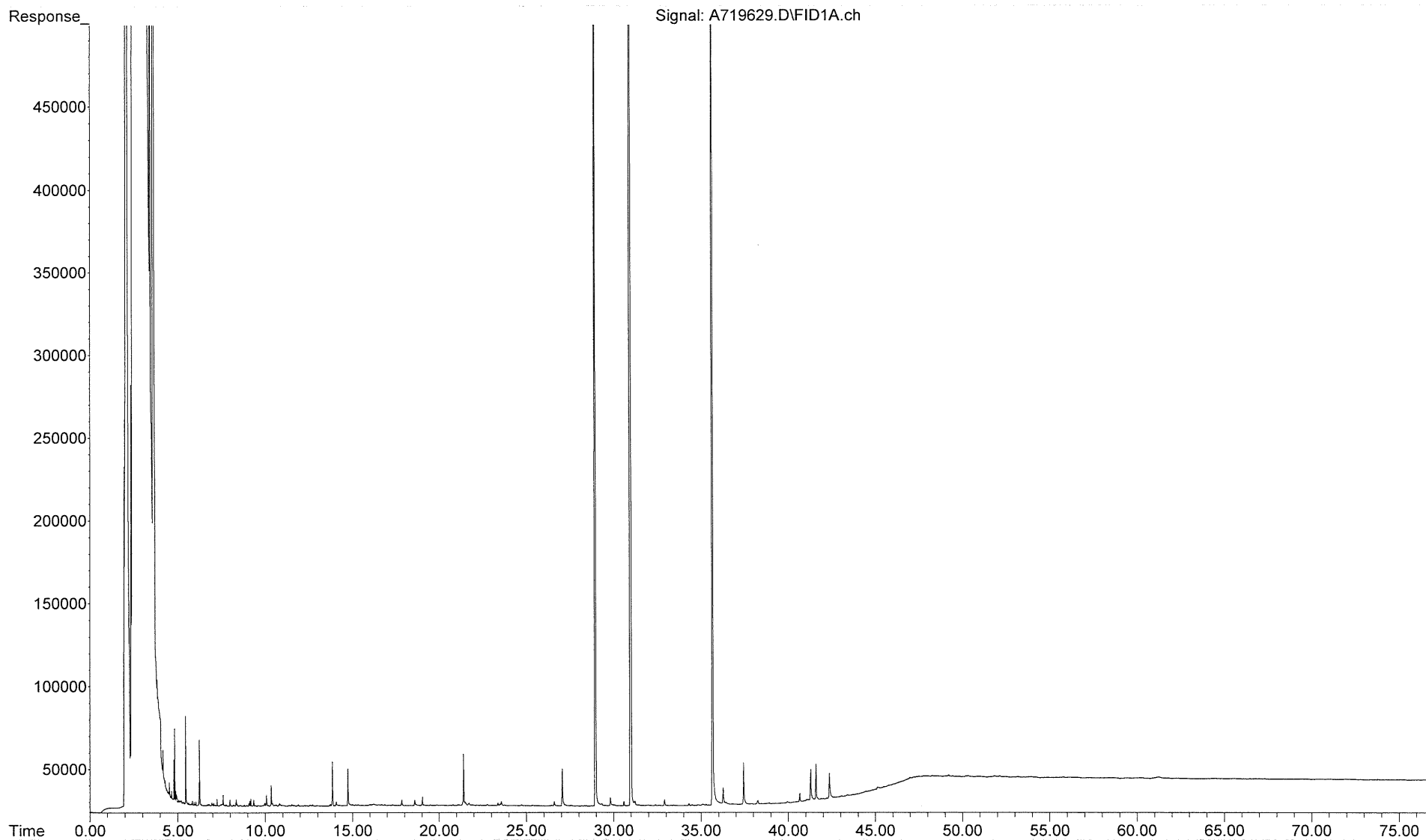
File :X:\nfef_whg\2012 AWHL Data\GZA 642 Allens Ave\1212011\FID\IC
... AL\HC7111612F.M Data Files\A719233.D
Operator : JT
Instrument : FID 7
Acquired : 17 Nov 2012 2:06 am using AcqMethod FID7.M
Sample Name: TS113012ANC01
Misc Info : WHAP13

**Reference Standard
North Slope Crude**



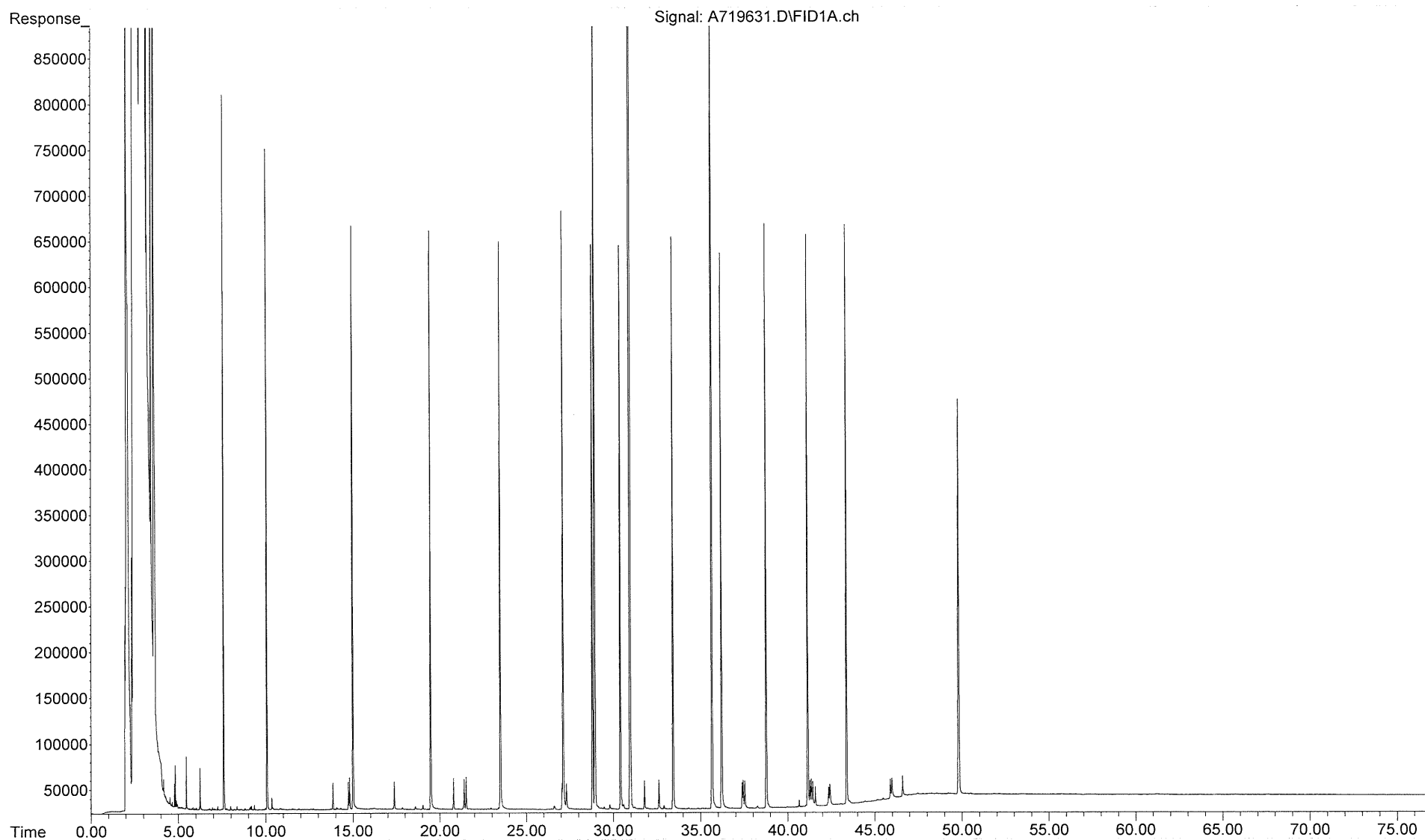
File :X:\nfeff_whg\2012 AWHL Data\GZA 642 Allens Ave\1212011\FID\A7
... 19629.D
Operator : JT
Instrument : FID 7
Acquired : 18 Dec 2012 8:52 pm using AcqMethod FID7.M
Sample Name: TS121212B01
Misc Info : 1X

Method Blank
TS121212B01



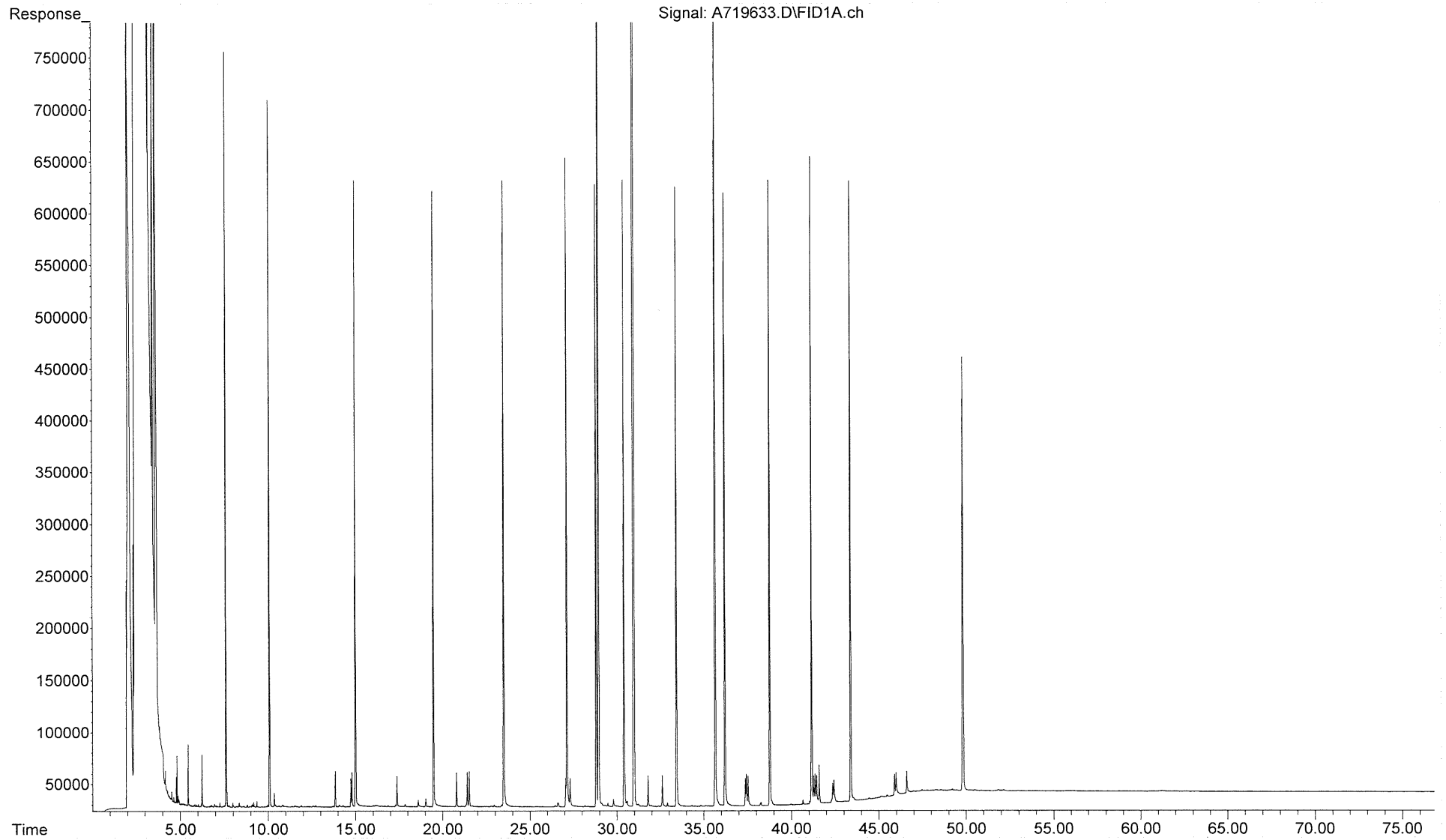
File :X:\nfef_whg\2012 AWHL Data\GZA 642 Allens Ave\1212011\FID\A7
... 19631.D
Operator : JT
Instrument : FID 7
Acquired : 18 Dec 2012 10:17 pm using AcqMethod FID7.M
Sample Name: TS121212LCS01
Misc Info : 1X

**Laboratory Control Sample
TS121212LCS01**



File :X:\nfef_whg\2012 AWHL Data\GZA 642 Allens Ave\1212011\FID\A7
... 19633.D
Operator : JT
Instrument : FID 7
Acquired : 18 Dec 2012 11:42 pm using AcqMethod FID7.M
Sample Name: TS121212LCSD01
Misc Info : 1X

Laboratory Control Sample Dup
TS121212LCSD01



Data Tables

TPH Data

Project Name: GZA-642 Allens Ave
 Project Number:

| | | |
|-------------------|-------------|-------------|
| Client ID | MH-1 | 3M PAD BD |
| Lab ID | 1212011-01 | 1212011-02 |
| Matrix | Solid | Solid |
| Reference Method | SHC | SHC |
| Batch ID | TS121212B01 | TS121212B01 |
| Date Collected | 12/05/2012 | 12/05/2012 |
| Date Received | 12/06/2012 | 12/06/2012 |
| Date Prepped | 12/12/2012 | 12/12/2012 |
| Date Analyzed | 12/19/2012 | 12/19/2012 |
| Sample Size (wet) | 0.4122 | 0.08808 |
| % Solid | 100.00 | 100.00 |
| File ID | A719637.D | A719639.D |
| Units | mg/Kg | mg/Kg |
| Final Volume | 50 | 10 |
| Dilution | 1 | 1 |
| Reporting Limit | 4000 | 3750 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 374000 | 4000 | 342000 | 3750 |

| | | |
|-------------------------|------|-----|
| Surrogates (% Recovery) | | |
| ortho-Terphenyl | 105 | 126 |
| d50-Tetracosane | 48 § | 76 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------|
| Client ID | Method Blank |
| Lab ID | TS121212B01 |
| Matrix | Solid |
| Reference Method | SHC |
| Batch ID | TS121212B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 12/12/2012 |
| Date Analyzed | 12/18/2012 |
| Sample Size (wet) | 0.3 |
| % Solid | 100.00 |
| File ID | A719629.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 220 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | U | 220 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 88 |
| d50-Tetracosane | 90 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | TS121212LCS01 |
| Matrix | Solid |
| Reference Method | SHC |
| Batch ID | TS121212B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 12/12/2012 |
| Date Analyzed | 12/18/2012 |
| Sample Size (wet) | 0.3 |
| % Solid | 100.00 |
| File ID | A719631.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 220 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---------------------------------------|--------|------|-------|-------------|-------------|-------------|
| SHC | C9 | n-Nonane (C9) | 57.1 S | 6.67 | 86 | 66.7 | 50 | 130 |
| SHC | C10 | n-Decane (C10) | 60.8 S | 6.67 | 91 | 66.7 | 50 | 130 |
| SHC | C12 | n-Dodecane (C12) | 61.2 S | 6.67 | 92 | 66.7 | 50 | 130 |
| SHC | C14 | n-Tetradecane (C14) | 63.6 S | 6.67 | 95 | 66.7 | 50 | 130 |
| SHC | C16 | n-Hexadecane (C16) | 68.4 S | 6.67 | 103 | 66.7 | 50 | 130 |
| SHC | C18 | n-Octadecane (C18) | 69.1 S | 6.67 | 104 | 66.7 | 50 | 130 |
| SHC | C19 | n-Nonadecane (C19) | 64.5 S | 6.67 | 97 | 66.7 | 50 | 130 |
| SHC | C20 | n-Eicosane (C20) | 65.4 S | 6.67 | 98 | 66.7 | 50 | 130 |
| SHC | C22 | n-Docosane (C22) | 65.5 S | 6.67 | 98 | 66.7 | 50 | 130 |
| SHC | C24 | n-Tetracosane (C24) | 67.6 S | 6.67 | 101 | 66.7 | 50 | 130 |
| SHC | C26 | n-Hexacosane (C26) | 66.7 S | 6.67 | 100 | 66.7 | 50 | 130 |
| SHC | C28 | n-Octacosane (C28) | 66.5 S | 6.67 | 100 | 66.7 | 50 | 130 |
| SHC | C30 | n-Triacontane (C30) | 67.6 S | 6.67 | 101 | 66.7 | 50 | 130 |
| SHC | C36 | n-Hexatriacontane (C36) | 65.8 S | 6.67 | 99 | 66.7 | 50 | 130 |
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 734 | 220 | | | | |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 92 |
| d50-Tetracosane | 94 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|-------------------------------|
| Client ID | Laboratory Control Sample Dup |
| Lab ID | TS121212LCSD01 |
| Matrix | Solid |
| Reference Method | SHC |
| Batch ID | TS121212B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 12/12/2012 |
| Date Analyzed | 12/18/2012 |
| Sample Size (wet) | 0.3 |
| % Solid | 100.00 |
| File ID | A719633.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 220 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|---------------------------------------|--------|------|-------|-------------|-------------|-------------|-----|-----------|
| SHC | C9 | n-Nonane (C9) | 53.3 S | 6.67 | 80 | 66.7 | 50 | 130 | 7 | 30 |
| SHC | C10 | n-Decane (C10) | 58.1 S | 6.67 | 87 | 66.7 | 50 | 130 | 5 | 30 |
| SHC | C12 | n-Dodecane (C12) | 59.0 S | 6.67 | 88 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C14 | n-Tetradecane (C14) | 61.0 S | 6.67 | 92 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C16 | n-Hexadecane (C16) | 65.5 S | 6.67 | 98 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C18 | n-Octadecane (C18) | 66.6 S | 6.67 | 100 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C19 | n-Nonadecane (C19) | 62.2 S | 6.67 | 93 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C20 | n-Eicosane (C20) | 63.0 S | 6.67 | 95 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C22 | n-Docosane (C22) | 63.1 S | 6.67 | 95 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C24 | n-Tetracosane (C24) | 64.6 S | 6.67 | 97 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C26 | n-Hexacosane (C26) | 64.4 S | 6.67 | 97 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C28 | n-Octacosane (C28) | 64.0 S | 6.67 | 96 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C30 | n-Triacontane (C30) | 65.0 S | 6.67 | 98 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | C36 | n-Hexatriacontane (C36) | 63.0 S | 6.67 | 95 | 66.7 | 50 | 130 | 4 | 30 |
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 636 | 220 | | | | | | |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 88 |
| d50-Tetracosane | 90 |



Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|--------------------------|
| Client ID | Alaska North Slope Crude |
| Lab ID | TS113012ANC01 |
| Matrix | Oil |
| Reference Method | SHC |
| Batch ID | N/A |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 11/17/2012 |
| Sample Size (wet) | 0.10058 |
| % Solid | 100.00 |
| File ID | A719233.D |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 3280 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---------------------------------------|--------|------|-------|-------------|-------------|-------------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 578000 | 3280 | 104 | 554993.00 | 65 | 135 |

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
a: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
a: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.

PAH Data

Project Name: GZA-642 Allens Ave
 Project Number:

| | | |
|-------------------|----------------|----------------|
| Client ID | MH-1 | 3M PAD BD |
| Lab ID | 1212011-01 | 1212011-02 |
| Matrix | Solid | Solid |
| Reference Method | Modified 8270D | Modified 8270D |
| Batch ID | TS121212B01 | TS121212B01 |
| Date Collected | 12/05/2012 | 12/05/2012 |
| Date Received | 12/06/2012 | 12/06/2012 |
| Date Prepped | 12/12/2012 | 12/12/2012 |
| Date Analyzed | 02/14/2013 | 02/14/2013 |
| Sample Size (wet) | 0.4122 | 0.08808 |
| % Solid | 100.00 | 100.00 |
| File ID | c39536.D | c39538.D |
| Units | mg/Kg | mg/Kg |
| Final Volume | 50 | 10 |
| Dilution | 1 | 1 |
| Reporting Limit | 1.21 | 1.14 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL |
|-------|--------|---|--------|--------|--------|--------|
| 2 | D0 | cis/trans-Decalin | 12.6 | 1.21 | | U 1.14 |
| 2 | D1 | C1-Decalins | 39.6 | 1.21 | 1.54 | 1.14 |
| 2 | D2 | C2-Decalins | 54.6 | 1.21 | 5.06 | 1.14 |
| 2 | D3 | C3-Decalins | 42.2 | 1.21 | | U 1.14 |
| 2 | D4 | C4-Decalins | 52.7 | 1.21 | | U 1.14 |
| 2 | BT0 | Benzothiophene | 0.179 | J 1.21 | | U 1.14 |
| 2 | BT1 | C1-Benzo(b)thiophenes | 4.87 | 1.21 | | U 1.14 |
| 2 | BT2 | C2-Benzo(b)thiophenes | 11.2 | 1.21 | | U 1.14 |
| 2 | BT3 | C3-Benzo(b)thiophenes | 60.8 | 1.21 | | U 1.14 |
| 2 | BT4 | C4-Benzo(b)thiophenes | 98.0 | 1.21 | | U 1.14 |
| 2 | N0 | Naphthalene | 1.99 | 1.21 | 1.96 | 1.14 |
| 2 | N1 | C1-Naphthalenes | 4.33 | 1.21 | 4.55 | 1.14 |
| 2 | N2 | C2-Naphthalenes | 29.6 | 1.21 | 11.2 | 1.14 |
| 2 | N3 | C3-Naphthalenes | 123 | 1.21 | 8.19 | 1.14 |
| 2 | N4 | C4-Naphthalenes | 141 | 1.21 | 4.50 | 1.14 |
| 2 | B | Biphenyl | 1.23 | 1.21 | 0.673 | J 1.14 |
| 3 | DF | Dibenzofuran | 12.4 | 1.21 | 0.929 | J 1.14 |
| 3 | AY | Acenaphthylene | 24.5 | 1.21 | 0.176 | J 1.14 |
| 3 | AE | Acenaphthene | 26.9 | 1.21 | 0.972 | J 1.14 |
| 3 | F0 | Fluorene | 35.2 | 1.21 | 1.16 | 1.14 |
| 3 | F1 | C1-Fluorenes | 40.6 | 1.21 | 1.75 | 1.14 |
| 3 | F2 | C2-Fluorenes | 68.9 | 1.21 | 1.30 | 1.14 |
| 3 | F3 | C3-Fluorenes | 66.7 | 1.21 | | U 1.14 |
| 3 | A0 | Anthracene | 56.0 | 1.21 | 0.213 | J 1.14 |
| 3 | P0 | Phenanthrene | 106 | 1.21 | 3.50 | 1.14 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | 154 | 1.21 | 4.71 | G 1.14 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | 137 | 1.21 | 1.50 | 1.14 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | 77.3 | 1.21 | | U 1.14 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | 37.6 | 1.21 | | U 1.14 |
| 3 | RET | Retene | | U 1.21 | | U 1.14 |
| 3 | DBT0 | Dibenzothiophene | 15.2 | 1.21 | 0.344 | J 1.14 |
| 3 | DBT1 | C1-Dibenzothiophenes | 72.9 | 1.21 | 1.38 | 1.14 |
| 3 | DBT2 | C2-Dibenzothiophenes | 146 | 1.21 | | U 1.14 |
| 3 | DBT3 | C3-Dibenzothiophenes | 171 | 1.21 | | U 1.14 |
| 3 | DBT4 | C4-Dibenzothiophenes | 110 | 1.21 | | U 1.14 |
| 4 | BF | Benzo(b)fluorene | 49.5 | 1.21 | | U 1.14 |
| 4 | FL0 | Fluoranthene | 220 | 1.21 | 0.371 | J 1.14 |
| 4 | PY0 | Pyrene | 211 | 1.21 | 0.246 | J 1.14 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | 210 | 1.21 | | U 1.14 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | 99.1 | 1.21 | | U 1.14 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | 55.2 | 1.21 | | U 1.14 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | 31.3 | 1.21 | | U 1.14 |
| 4 | NBT0 | Naphthobenzothiophenes | 32.7 | 1.21 | | U 1.14 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | 41.1 | 1.21 | | U 1.14 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | 46.4 | 1.21 | | U 1.14 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | 39.0 | 1.21 | | U 1.14 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | 28.7 | 1.21 | | U 1.14 |
| 4 | BA0 | Benz[a]anthracene | 145 | 1.21 | | U 1.14 |
| 4 | C0 | Chrysene/Triphenylene | 134 | 1.21 | | U 1.14 |
| 4 | BC1 | C1-Chrysenes | 106 | 1.21 | | U 1.14 |
| 4 | BC2 | C2-Chrysenes | 69.0 | 1.21 | | U 1.14 |
| 4 | BC3 | C3-Chrysenes | 55.9 | 1.21 | | U 1.14 |
| 4 | BC4 | C4-Chrysenes | 29.3 | 1.21 | | U 1.14 |
| 5 | BBF | Benzo(b)fluoranthene | 102 | 1.21 | | U 1.14 |
| 5 | BJKF | Benzo[j]fluoranthene/Benzo[k]fluoranthene | 95.4 | 1.21 | | U 1.14 |
| 5 | BAF | Benzo[a]fluoranthene | 27.1 | 1.21 | | U 1.14 |
| 5 | BEP | Benzo[e]pyrene | 76.0 | 1.21 | | U 1.14 |
| 5 | BAP | Benzo[a]pyrene | 107 | 1.21 | | U 1.14 |
| 5 | PER | Perylene | 15.8 | 1.21 | | U 1.14 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 45.5 | 1.21 | | U 1.14 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 18.2 | 1.21 | | U 1.14 |
| 6 | GHI | Benzo[g,h,i]perylene | 41.9 | 1.21 | | U 1.14 |
| | CAR | Carbazole | | U 1.21 | | U 1.14 |
| 3 | 4MDT | 4-Methyldibenzothiophene | 27.9 | 1.21 | 0.176 | J 1.14 |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | 22.9 | 1.21 | | U 1.14 |
| 3 | 1MDT | 1-Methyldibenzothiophene | 15.5 | 1.21 | 0.110 | J 1.14 |
| 3 | 3MP | 3-Methylphenanthrene | 38.3 | 1.21 | 3.88 | G 1.14 |
| 3 | 2MP | 2-Methylphenanthrene | 36.7 | 1.21 | 0.256 | J 1.14 |
| 3 | 2MA | 2-Methylanthracene | 17.8 | 1.21 | | U 1.14 |
| 3 | 9MP | 9/4-Methylphenanthrene | 36.0 | 1.21 | 0.145 | J 1.14 |
| 3 | 1MP | 1-Methylphenanthrene | 23.1 | 1.21 | 0.120 | J 1.14 |

| | | |
|-------------------------|----|----|
| Surrogates (% Recovery) | | |
| Naphthalene-d8 | 63 | 75 |
| Phenanthrene-d10 | 81 | 84 |
| Benzo[a]pyrene-d12 | 75 | 81 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|----------------|
| Client ID | Method Blank |
| Lab ID | TS121212B01 |
| Matrix | Solid |
| Reference Method | Modified 8270D |
| Batch ID | TS121212B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 12/12/2012 |
| Date Analyzed | 02/14/2013 |
| Sample Size (wet) | 0.3 |
| % Solid | 100.00 |
| File ID | c39530.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0667 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|---|---------|----------|
| 2 | D0 | cis/trans-Decalin | U | 0.0667 |
| 2 | D1 | C1-Decalins | U | 0.0667 |
| 2 | D2 | C2-Decalins | U | 0.0667 |
| 2 | D3 | C3-Decalins | U | 0.0667 |
| 2 | D4 | C4-Decalins | U | 0.0667 |
| 2 | BT0 | Benzo(b)thiophene | U | 0.0667 |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 0.0667 |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 0.0667 |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 0.0667 |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 0.0667 |
| 2 | N0 | Naphthalene | 0.0121 | J 0.0667 |
| 2 | N1 | C1-Naphthalenes | U | 0.0667 |
| 2 | N2 | C2-Naphthalenes | U | 0.0667 |
| 2 | N3 | C3-Naphthalenes | U | 0.0667 |
| 2 | N4 | C4-Naphthalenes | U | 0.0667 |
| 2 | B | Biphenyl | U | 0.0667 |
| 3 | DF | Dibenzofuran | U | 0.0667 |
| 3 | AY | Acenaphthylene | U | 0.0667 |
| 3 | AE | Acenaphthene | U | 0.0667 |
| 3 | F0 | Fluorene | U | 0.0667 |
| 3 | F1 | C1-Fluorenes | U | 0.0667 |
| 3 | F2 | C2-Fluorenes | U | 0.0667 |
| 3 | F3 | C3-Fluorenes | U | 0.0667 |
| 3 | A0 | Anthracene | U | 0.0667 |
| 3 | P0 | Phenanthrene | 0.00996 | J 0.0667 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 0.0667 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 0.0667 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 0.0667 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 0.0667 |
| 3 | RET | Retene | U | 0.0667 |
| 3 | DBT0 | Dibenzothiophene | U | 0.0667 |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 0.0667 |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 0.0667 |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 0.0667 |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 0.0667 |
| 4 | BF | Benzo(b)fluorene | U | 0.0667 |
| 4 | FL0 | Fluoranthene | U | 0.0667 |
| 4 | PY0 | Pyrene | U | 0.0667 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 0.0667 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 0.0667 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 0.0667 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 0.0667 |
| 4 | NBT0 | Naphthobenzothiophenes | U | 0.0667 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 0.0667 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 0.0667 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 0.0667 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 0.0667 |
| 4 | BA0 | Benz[a]anthracene | U | 0.0667 |
| 4 | C0 | Chrysene/Triphenylene | U | 0.0667 |
| 4 | BC1 | C1-Chrysenes | U | 0.0667 |
| 4 | BC2 | C2-Chrysenes | U | 0.0667 |
| 4 | BC3 | C3-Chrysenes | U | 0.0667 |
| 4 | BC4 | C4-Chrysenes | U | 0.0667 |
| 5 | BBF | Benzo[b]fluoranthene | U | 0.0667 |
| 5 | BJKF | Benzo[j]fluoranthene/Benzo[k]fluoranthene | U | 0.0667 |
| 5 | BAF | Benzo[a]fluoranthene | U | 0.0667 |
| 5 | BEP | Benzo[e]pyrene | U | 0.0667 |
| 5 | BAP | Benzo[a]pyrene | U | 0.0667 |
| 5 | PER | Perylene | U | 0.0667 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | U | 0.0667 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | U | 0.0667 |
| 6 | GHI | Benzo[g,h,i]perylene | U | 0.0667 |
| | CAR | Carbazole | U | 0.0667 |
| 3 | 4MDT | 4-Methyldibenzothiophene | U | 0.0667 |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | U | 0.0667 |
| 3 | 1MDT | 1-Methyldibenzothiophene | U | 0.0667 |
| 3 | 3MP | 3-Methylphenanthrene | U | 0.0667 |
| 3 | 2MP | 2-Methylphenanthrene | U | 0.0667 |
| 3 | 2MA | 2-Methylanthracene | U | 0.0667 |
| 3 | 9MP | 9/4-Methylphenanthrene | U | 0.0667 |
| 3 | 1MP | 1-Methylphenanthrene | U | 0.0667 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| Naphthalene-d8 | 75 |
| Phenanthrene-d10 | 83 |
| Benzo[a]pyrene-d12 | 88 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | TS12121LCS01 |
| Matrix | Solid |
| Reference Method | Modified 8270D |
| Batch ID | TS121212B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 12/12/2012 |
| Date Analyzed | 02/14/2013 |
| Sample Size (wet) | 0.3 |
| % Solid | 100.00 |
| File ID | c39532.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0667 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | |
|-------|--------|--|--------|--------|--------|-------------|-------------|-------------|-----|
| 2 | D0 | cis/trans-Decalin | U | 0.0667 | | | | | |
| 2 | D1 | C1-Decalins | U | 0.0667 | | | | | |
| 2 | D2 | C2-Decalins | U | 0.0667 | | | | | |
| 2 | D3 | C3-Decalins | U | 0.0667 | | | | | |
| 2 | D4 | C4-Decalins | U | 0.0667 | | | | | |
| 2 | BT0 | Benzo(ghi)perylene | U | 0.0667 | | | | | |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 0.0667 | | | | | |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 0.0667 | | | | | |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 0.0667 | | | | | |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 0.0667 | | | | | |
| 2 | N0 | Naphthalene | 2.88 | S | 0.0667 | 87 | 3.33 | 50 | 130 |
| 2 | N1 | C1-Naphthalenes | U | 0.0667 | | | | | |
| 2 | N2 | C2-Naphthalenes | U | 0.0667 | | | | | |
| 2 | N3 | C3-Naphthalenes | U | 0.0667 | | | | | |
| 2 | N4 | C4-Naphthalenes | U | 0.0667 | | | | | |
| 2 | B | Biphenyl | U | 0.0667 | | | | | |
| 3 | DF | Dibenzofuran | U | 0.0667 | | | | | |
| 3 | AY | Acenaphthylene | 2.96 | S | 0.0667 | 89 | 3.33 | 50 | 130 |
| 3 | AE | Acenaphthene | 3.08 | S | 0.0667 | 93 | 3.33 | 50 | 130 |
| 3 | F0 | Fluorene | 3.10 | S | 0.0667 | 93 | 3.33 | 50 | 130 |
| 3 | F1 | C1-Fluorenes | U | 0.0667 | | | | | |
| 3 | F2 | C2-Fluorenes | U | 0.0667 | | | | | |
| 3 | F3 | C3-Fluorenes | U | 0.0667 | | | | | |
| 3 | A0 | Anthracene | 3.09 | S | 0.0667 | 93 | 3.33 | 50 | 130 |
| 3 | P0 | Phenanthrene | 3.11 | S | 0.0667 | 93 | 3.33 | 50 | 130 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | |
| 3 | RET | Retene | U | 0.0667 | | | | | |
| 3 | DBT0 | Dibenzothiophene | U | 0.0667 | | | | | |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 0.0667 | | | | | |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 0.0667 | | | | | |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 0.0667 | | | | | |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 0.0667 | | | | | |
| 4 | BF | Benzo(b)fluorene | U | 0.0667 | | | | | |
| 4 | FL0 | Fluoranthene | 3.09 | S | 0.0667 | 93 | 3.33 | 50 | 130 |
| 4 | PY0 | Pyrene | 3.08 | S | 0.0667 | 92 | 3.33 | 50 | 130 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | |
| 4 | NBT0 | Naphthobenzothiophenes | U | 0.0667 | | | | | |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 0.0667 | | | | | |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 0.0667 | | | | | |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 0.0667 | | | | | |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 0.0667 | | | | | |
| 4 | BA0 | Benzo(a)anthracene | 3.20 | S | 0.0667 | 96 | 3.33 | 50 | 130 |
| 4 | C0 | Chrysene/Triphenylene | 3.30 | S | 0.0667 | 99 | 3.33 | 50 | 130 |
| 4 | BC1 | C1-Chrysenes | U | 0.0667 | | | | | |
| 4 | BC2 | C2-Chrysenes | U | 0.0667 | | | | | |
| 4 | BC3 | C3-Chrysenes | U | 0.0667 | | | | | |
| 4 | BC4 | C4-Chrysenes | U | 0.0667 | | | | | |
| 5 | BBF | Benzo(b)fluoranthene | 3.30 | S | 0.0667 | 99 | 3.33 | 50 | 130 |
| 5 | BJKF | Benzo(j)fluoranthene/Benzo(k)fluoranthene | 3.33 | S | 0.0667 | 100 | 3.33 | 50 | 130 |
| 5 | BAF | Benzo(a)fluoranthene | U | 0.0667 | | | | | |
| 5 | BEP | Benzo(e)pyrene | U | 0.0667 | | | | | |
| 5 | BAP | Benzo(a)pyrene | 3.43 | S | 0.0667 | 103 | 3.33 | 50 | 130 |
| 5 | PER | Perylene | U | 0.0667 | | | | | |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 3.30 | S | 0.0667 | 99 | 3.33 | 50 | 130 |
| 6 | DA | Dibenz(a,h)anthracene/Dibenz(ac)anthracene | 3.34 | S | 0.0667 | 100 | 3.33 | 50 | 130 |
| 6 | GHI | Benzo(g,h,i)perylene | 2.96 | S | 0.0667 | 89 | 3.33 | 50 | 130 |
| | CAR | Carbazole | U | 0.0667 | | | | | |
| 3 | 4MDT | 4-Methyl dibenzothiophene | U | 0.0667 | | | | | |
| 3 | 2MDT | 2/3-Methyl dibenzothiophene | U | 0.0667 | | | | | |
| 3 | 1MDT | 1-Methyl dibenzothiophene | U | 0.0667 | | | | | |
| 3 | 3MP | 3-Methylphenanthrene | U | 0.0667 | | | | | |
| 3 | 2MP | 2-Methylphenanthrene | U | 0.0667 | | | | | |
| 3 | 2MA | 2-Methylanthracene | U | 0.0667 | | | | | |
| 3 | 9MP | 9/4-Methylphenanthrene | U | 0.0667 | | | | | |
| 3 | 1MP | 1-Methylphenanthrene | U | 0.0667 | | | | | |

Surrogates (% Recovery)
 Naphthalene-d8 82
 Phenanthrene-d10 90
 Benzo(a)pyrene-d12 88

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|-------------------------------|
| Client ID | Laboratory Control Sample Dup |
| Lab ID | TS121212LCSD01 |
| Matrix | Solid |
| Reference Method | Modified 8270D |
| Batch ID | TS121212B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 12/12/2012 |
| Date Analyzed | 02/14/2013 |
| Sample Size (wet) | 0.3 |
| % Solid | 100.00 |
| File ID | c39534.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0667 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|---|--------|--------|-------|-------------|-------------|-------------|-----|-----------|
| 2 | D0 | cis/trans-Decalin | U | 0.0667 | | | | | | |
| 2 | D1 | C1-Decalins | U | 0.0667 | | | | | | |
| 2 | D2 | C2-Decalins | U | 0.0667 | | | | | | |
| 2 | D3 | C3-Decalins | U | 0.0667 | | | | | | |
| 2 | D4 | C4-Decalins | U | 0.0667 | | | | | | |
| 2 | BT0 | Benzo(b)thiophene | U | 0.0667 | | | | | | |
| 2 | BT1 | C1-Benzo(b)thiophenes | U | 0.0667 | | | | | | |
| 2 | BT2 | C2-Benzo(b)thiophenes | U | 0.0667 | | | | | | |
| 2 | BT3 | C3-Benzo(b)thiophenes | U | 0.0667 | | | | | | |
| 2 | BT4 | C4-Benzo(b)thiophenes | U | 0.0667 | | | | | | |
| 2 | N0 | Naphthalene | 2.76 S | 0.0667 | 83 | 3.33 | 50 | 130 | 4 | 30 |
| 2 | N1 | C1-Naphthalenes | U | 0.0667 | | | | | | |
| 2 | N2 | C2-Naphthalenes | U | 0.0667 | | | | | | |
| 2 | N3 | C3-Naphthalenes | U | 0.0667 | | | | | | |
| 2 | N4 | C4-Naphthalenes | U | 0.0667 | | | | | | |
| 2 | B | Biphenyl | U | 0.0667 | | | | | | |
| 3 | DF | Dibenzofuran | U | 0.0667 | | | | | | |
| 3 | AY | Acenaphthylene | 2.82 S | 0.0667 | 84 | 3.33 | 50 | 130 | 5 | 30 |
| 3 | AE | Acenaphthene | 2.96 S | 0.0667 | 89 | 3.33 | 50 | 130 | 4 | 30 |
| 3 | F0 | Fluorene | 2.98 S | 0.0667 | 89 | 3.33 | 50 | 130 | 4 | 30 |
| 3 | F1 | C1-Fluorenes | U | 0.0667 | | | | | | |
| 3 | F2 | C2-Fluorenes | U | 0.0667 | | | | | | |
| 3 | F3 | C3-Fluorenes | U | 0.0667 | | | | | | |
| 3 | A0 | Anthracene | 2.95 S | 0.0667 | 88 | 3.33 | 50 | 130 | 5 | 30 |
| 3 | P0 | Phenanthrene | 2.96 S | 0.0667 | 89 | 3.33 | 50 | 130 | 5 | 30 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | | |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | | |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | | |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | U | 0.0667 | | | | | | |
| 3 | RET | Retene | U | 0.0667 | | | | | | |
| 3 | DBT0 | Dibenzothiophene | U | 0.0667 | | | | | | |
| 3 | DBT1 | C1-Dibenzothiophenes | U | 0.0667 | | | | | | |
| 3 | DBT2 | C2-Dibenzothiophenes | U | 0.0667 | | | | | | |
| 3 | DBT3 | C3-Dibenzothiophenes | U | 0.0667 | | | | | | |
| 3 | DBT4 | C4-Dibenzothiophenes | U | 0.0667 | | | | | | |
| 4 | BF | Benzo(b)fluorene | U | 0.0667 | | | | | | |
| 4 | FL0 | Fluoranthene | 3.01 S | 0.0667 | 90 | 3.33 | 50 | 130 | 3 | 30 |
| 4 | PY0 | Pyrene | 3.02 S | 0.0667 | 90 | 3.33 | 50 | 130 | 2 | 30 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | | |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | | |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | | |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | U | 0.0667 | | | | | | |
| 4 | NBT0 | Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | NBT1 | C1-Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | NBT2 | C2-Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | NBT3 | C3-Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | NBT4 | C4-Naphthobenzothiophenes | U | 0.0667 | | | | | | |
| 4 | BA0 | Benzo[a]anthracene | 3.13 S | 0.0667 | 94 | 3.33 | 50 | 130 | 2 | 30 |
| 4 | C0 | Chrysene/Triphenylene | 3.26 S | 0.0667 | 98 | 3.33 | 50 | 130 | 1 | 30 |
| 4 | BC1 | C1-Chrysenes | U | 0.0667 | | | | | | |
| 4 | BC2 | C2-Chrysenes | U | 0.0667 | | | | | | |
| 4 | BC3 | C3-Chrysenes | U | 0.0667 | | | | | | |
| 4 | BC4 | C4-Chrysenes | U | 0.0667 | | | | | | |
| 5 | BBF | Benzo[b]fluoranthene | 3.26 S | 0.0667 | 98 | 3.33 | 50 | 130 | 1 | 30 |
| 5 | BJKF | Benzo[j]fluoranthene/Benzo[k]fluoranthene | 3.19 S | 0.0667 | 96 | 3.33 | 50 | 130 | 4 | 30 |
| 5 | BAF | Benzo[a]fluoranthene | U | 0.0667 | | | | | | |
| 5 | BEP | Benzo[e]pyrene | U | 0.0667 | | | | | | |
| 5 | BAP | Benzo[a]pyrene | 3.31 S | 0.0667 | 99 | 3.33 | 50 | 130 | 4 | 30 |
| 5 | PER | Perylene | U | 0.0667 | | | | | | |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 3.03 S | 0.0667 | 91 | 3.33 | 50 | 130 | 8 | 30 |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 3.24 S | 0.0667 | 97 | 3.33 | 50 | 130 | 3 | 30 |
| 6 | GHI | Benzo[g,h,i]perylene | 2.82 S | 0.0667 | 85 | 3.33 | 50 | 130 | 5 | 30 |
| | CAR | Carbazole | U | 0.0667 | | | | | | |
| 3 | 4MDT | 4-Methyl dibenzothiophene | U | 0.0667 | | | | | | |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | U | 0.0667 | | | | | | |
| 3 | 1MDT | 1-Methyldibenzothiophene | U | 0.0667 | | | | | | |
| 3 | 3MP | 3-Methylphenanthrene | U | 0.0667 | | | | | | |
| 3 | 2MP | 2-Methylphenanthrene | U | 0.0667 | | | | | | |
| 3 | 2MA | 2-Methylanthracene | U | 0.0667 | | | | | | |
| 3 | 9MP | 9/4-Methylphenanthrene | U | 0.0667 | | | | | | |
| 3 | 1MP | 1-Methylphenanthrene | U | 0.0667 | | | | | | |

 Surrogates (% Recovery)
 Naphthalene-d8 74
 Phenanthrene-d10 86
 Benzo[a]pyrene-d12 85

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------------|
| Client ID | Alaska North Slope Crude |
| Lab ID | SS112112ANC01 |
| Matrix | Oil |
| Reference Method | Modified 8270D |
| Batch ID | N/A |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 11/16/2012 |
| Sample Size (wet) | 0.05076 |
| % Solid | 100.00 |
| File ID | C37280.D |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 1.97 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---|--------|------|-------|-------------|-------------|-------------|
| 2 | D0 | cis/trans-Decalin | 468 | 1.97 | 98 | 479.20 | 65 | 135 |
| 2 | D1 | C1-Decalins | 726 | 1.97 | 100 | 728.90 | 65 | 135 |
| 2 | D2 | C2-Decalins | 622 | 1.97 | 98 | 635.50 | 65 | 135 |
| 2 | D3 | C3-Decalins | 325 | 1.97 | 98 | 329.80 | 65 | 135 |
| 2 | D4 | C4-Decalins | 289 | 1.97 | 89 | 326.50 | 65 | 135 |
| 2 | BT0 | Benzo(b)thiophene | 5.88 | 1.97 | 109 | 5.40 | 65 | 135 |
| 2 | BT1 | C1-Benzo(b)thiophenes | 31.3 | 1.97 | 108 | 28.90 | 65 | 135 |
| 2 | BT2 | C2-Benzo(b)thiophenes | 47.7 | 1.97 | 96 | 49.60 | 65 | 135 |
| 2 | BT3 | C3-Benzo(b)thiophenes | 97.9 | 1.97 | 99 | 99.00 | 65 | 135 |
| 2 | BT4 | C4-Benzo(b)thiophenes | 86.8 | 1.97 | 100 | 87.10 | 65 | 135 |
| 2 | N0 | Naphthalene | 563 | 1.97 | 101 | 555.80 | 65 | 135 |
| 2 | N1 | C1-Naphthalenes | 1160 | 1.97 | 99 | 1167.30 | 65 | 135 |
| 2 | N2 | C2-Naphthalenes | 1380 | 1.97 | 98 | 1409.70 | 65 | 135 |
| 2 | N3 | C3-Naphthalenes | 998 | 1.97 | 96 | 1035.90 | 65 | 135 |
| 2 | N4 | C4-Naphthalenes | 550 | 1.97 | 98 | 561.10 | 65 | 135 |
| 2 | B | Biphenyl | 140 | 1.97 | 96 | 145.70 | 65 | 135 |
| 3 | DF | Dibenzofuran | 45.2 | 1.97 | 88 | 51.20 | 65 | 135 |
| 3 | AY | Acenaphthylene | 6.93 | 1.97 | 107 | 6.50 | 65 | 135 |
| 3 | AE | Acenaphthene | 15.9 | 1.97 | 85 | 18.70 | 65 | 135 |
| 3 | F0 | Fluorene | 63.1 | 1.97 | 85 | 74.60 | 65 | 135 |
| 3 | F1 | C1-Fluorenes | 150 | 1.97 | 88 | 170.20 | 65 | 135 |
| 3 | F2 | C2-Fluorenes | 225 | 1.97 | 88 | 255.40 | 65 | 135 |
| 3 | F3 | C3-Fluorenes | 204 | 1.97 | 86 | 238.50 | 65 | 135 |
| 3 | A0 | Anthracene | U | 1.97 | | | | |
| 3 | P0 | Phenanthrene | 177 | 1.97 | 83 | 212.20 | 65 | 135 |
| 3 | PA1 | C1-Phenanthrenes/Anthracenes | 359 | 1.97 | 83 | 432.70 | 65 | 135 |
| 3 | PA2 | C2-Phenanthrenes/Anthracenes | 407 | 1.97 | 87 | 465.90 | 65 | 135 |
| 3 | PA3 | C3-Phenanthrenes/Anthracenes | 296 | 1.97 | 93 | 317.40 | 65 | 135 |
| 3 | PA4 | C4-Phenanthrenes/Anthracenes | 119 | 1.97 | 92 | 129.00 | 65 | 135 |
| 3 | RET | Retene | U | 1.97 | | | | |
| 3 | DBT0 | Dibenzothiophene | 115 | 1.97 | 83 | 138.90 | 65 | 135 |
| 3 | DBT1 | C1-Dibenzothiophenes | 253 | 1.97 | 91 | 278.60 | 65 | 135 |
| 3 | DBT2 | C2-Dibenzothiophenes | 333 | 1.97 | 88 | 377.50 | 65 | 135 |
| 3 | DBT3 | C3-Dibenzothiophenes | 316 | 1.97 | 93 | 341.40 | 65 | 135 |
| 3 | DBT4 | C4-Dibenzothiophenes | 178 | 1.97 | 97 | 183.40 | 65 | 135 |
| 4 | BF | Benzo(b)fluorene | 6.02 | 1.97 | | | | |
| 4 | FL0 | Fluoranthene | 3.27 | 1.97 | 82 | 4.00 | 65 | 135 |
| 4 | PY0 | Pyrene | 11.4 | 1.97 | 88 | 13.00 | 65 | 135 |
| 4 | FP1 | C1-Fluoranthenes/Pyrenes | 54.7 | 1.97 | 87 | 63.10 | 65 | 135 |
| 4 | FP2 | C2-Fluoranthenes/Pyrenes | 88.8 | 1.97 | 87 | 102.20 | 65 | 135 |
| 4 | FP3 | C3-Fluoranthenes/Pyrenes | 102 | 1.97 | 85 | 119.60 | 65 | 135 |
| 4 | FP4 | C4-Fluoranthenes/Pyrenes | 88.9 | 1.97 | 85 | 104.00 | 65 | 135 |
| 4 | NBT0 | Naphthobenzothiophenes | 34.9 | 1.97 | 80 | 43.80 | 65 | 135 |
| 4 | NBT1 | C1-Naphthobenzothiophenes | 99.3 | 1.97 | 85 | 117.20 | 65 | 135 |
| 4 | NBT2 | C2-Naphthobenzothiophenes | 137 | 1.97 | 84 | 163.30 | 65 | 135 |
| 4 | NBT3 | C3-Naphthobenzothiophenes | 103 | 1.97 | 80 | 128.70 | 65 | 135 |
| 4 | NBT4 | C4-Naphthobenzothiophenes | 69.8 | 1.97 | 78 | 89.00 | 65 | 135 |
| 4 | BA0 | Benz[a]anthracene | 1.89 | 1.97 | 90 | 2.10 | 65 | 135 |
| 4 | C0 | Chrysene/Triphenylene | 30.8 | 1.97 | 88 | 35.20 | 65 | 135 |
| 4 | BC1 | C1-Chrysenes | 57.9 | 1.97 | 92 | 62.80 | 65 | 135 |
| 4 | BC2 | C2-Chrysenes | 74.5 | 1.97 | 87 | 86.00 | 65 | 135 |
| 4 | BC3 | C3-Chrysenes | 86.9 | 1.97 | 89 | 97.60 | 65 | 135 |
| 4 | BC4 | C4-Chrysenes | 50.9 | 1.97 | 86 | 59.40 | 65 | 135 |
| 5 | BBF | Benzo[b]fluoranthene | 4.68 | 1.97 | 90 | 5.20 | 65 | 135 |
| 5 | BJKF | Benzo[k]fluoranthene/Benzo[k]fluoranthene | U | 1.97 | | | | |
| 5 | BAF | Benzo[a]fluoranthene | U | 1.97 | | | | |
| 5 | BEP | Benzo[e]pyrene | 8.96 | 1.97 | 91 | 9.80 | 65 | 135 |
| 5 | BAP | Benzo[a]pyrene | 1.80 | 1.97 | 95 | 1.90 | 65 | 135 |
| 5 | PER | Perylene | 3.02 | 1.97 | 108 | 2.80 | 65 | 135 |
| 6 | IND | Indeno[1,2,3-cd]pyrene | 0.865 | 1.97 | | | | |
| 6 | DA | Dibenz[ah]anthracene/Dibenz[ac]anthracene | 0.763 | 1.97 | | | | |
| 6 | GHI | Benzo[g,h,i]perylene | 3.39 | 1.97 | 109 | 3.10 | 65 | 135 |
| | CAR | Carbazole | 5.30 | 1.97 | 88 | 6.00 | 65 | 135 |
| 3 | 4MDT | 4-Methyldibenzothiophene | 125 | 1.97 | 95 | 131.80 | 65 | 135 |
| 3 | 2MDT | 2/3-Methyldibenzothiophene | 91.0 | 1.97 | 93 | 97.50 | 65 | 135 |
| 3 | 1MDT | 1-Methyldibenzothiophene | 34.9 | 1.97 | 79 | 44.20 | 65 | 135 |
| 3 | 3MP | 3-Methylphenanthrene | 71.8 | 1.97 | 80 | 89.40 | 65 | 135 |
| 3 | 2MP | 2-Methylphenanthrene | 80.4 | 1.97 | 82 | 97.70 | 65 | 135 |
| 3 | 2MA | 2-Methylanthracene | 2.64 | 1.97 | 83 | 3.20 | 65 | 135 |
| 3 | 9MP | 9/4-Methylphenanthrene | 119 | 1.97 | 84 | 141.20 | 65 | 135 |
| 3 | 1MP | 1-Methylphenanthrene | 80.1 | 1.97 | 82 | 97.40 | 65 | 135 |

U: The analyte was analyzed for but not detected at the sample specific level reported
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
#: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
R: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDI
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

June 26, 2013

Ms. Margaret Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, Rhode Island 02909

Subject: Chemical Fingerprinting at 642 Allens Avenue, Providence, Rhode Island

Dear Ms. Kilpatrick,

NewFields is pleased to provide you with this letter report, summarizing the results of the analysis conducted on one sheen sample collected from National Grid's facility located at 642 Allens Avenue in Providence, Rhode Island. The objective of this study was to determine the composition of the sample.

Sampling and Analysis

One sheen sample was collected on June 5, 2013 and was packed on ice and shipped the following day by courier to NewFields' alliance laboratory, Alpha Analytical Laboratory (Alpha) for chemical fingerprinting analysis. Also included in the shipment was an unused net (sheen sampler). Upon receipt, the samples were logged into Alpha's laboratory information management system (LIMS) and given unique laboratory identifications. The sample was stored in a limited access refrigerator at 4°C until processed by the laboratory staff for chemical fingerprinting analysis. Summary information of the sample collected is provided below. Chain-of-custody documentation is provided in Attachment 1.

| Client ID | Lab ID | Matrix | Date Collected | Date Received |
|-----------|------------|--------|----------------|---------------|
| Sheen-1 | 1306015-01 | Sheen | 05-Jun-13 | 06-Jun-13 |
| Blank | 1306015-02 | Sheen | 05-Jun-13 | 06-Jun-13 |

Samples were analyzed using laboratory methods tailored for the forensic analysis of petroleum described by Douglas et.al. (2007)¹:

- (1) *Total Petroleum Hydrocarbons (TPH) and Fingerprinting*: a modified EPA Method 8015B gas chromatography method was used to determine the total petroleum hydrocarbon (TPH) concentration (C₈ – C₄₄). A high resolution gas chromatogram produced by this method provides a detailed "fingerprint" of the hydrocarbons that compose samples. This analysis allowed for the characterization of the general boiling range(s) and type(s) of petroleum or other hydrocarbons present in the sample, as well as the degree(s) of weathering a fugitive product has undergone in the

¹ Douglas, G.D., Emsbo-Mattingly, S.D., Stout, S.A., Uhler, A.D., and McCarthy, K.J. (2007) Chemical fingerprinting of hydrocarbons and polychlorinated biphenyls. In: *Introduction to Environmental Forensics, 2nd Ed.*, B. Murphy and R. Morrison, Eds., Academic Press, New York, pp. 317-459.



Results and Discussion

The complete Alpha Environmental Testing Report (ETR) including all sample preparation data, instrument calibrations, QC data and chromatograms is maintained on file by NewFields (ETR 1306015). A data summary containing pertinent gas chromatograms and tabulated results of all chemical analyses and quality control results may be found as Attachment 1 to this letter.

All analyses were conducted following established laboratory data quality objectives (DQOs). Appropriate laboratory quality control (QC) samples were processed along with the samples. The QC samples included laboratory method blank (B), laboratory control samples (LCS/LCSD), and a reference materials oil. Resulting data underwent several levels of review. NewFields performed an independent review of the data generated by Alpha Laboratory, to ensure that data quality objectives were satisfied, and that the results were traceable to the raw data. NewFields also reviewed the data for compliance with the laboratory's documented procedures and established laboratory quality objectives. The data were found to be accurate and traceable, and met laboratory established method data quality objectives.

Compositional Features.

Gas chromatography/flame ionization detection (GC/FID) was used to develop a qualitative chromatographic "fingerprint" of the overall hydrocarbon makeup of the samples. The gas chromatogram depicts the distribution of hydrocarbons in a sample, from most volatile to least volatile². The peaks and unresolved complex mixture (UCM) "humps" that appear in the chromatogram represent the occurrence of discrete compounds or mixtures of compounds, the areas of which are proportional to the abundance of those compounds in the sample. Every hydrocarbon material or product has its own near-unique distribution of peaks and thus, a recognizable GC "fingerprint". Even though weathering processes can alter the chromatographic signature of hydrocarbons, important characteristics of the hydrocarbon assemblages can usually be distinguished from the GC "fingerprint".

The GC/FID fingerprint for Sheen-1 is shown in Figure 1. The makeup of this sample is consistent with mixed petroleum-oil tar and parking lot runoff. The gas chromatographic trace (Figure 1) exhibits a broad unresolved complex mixture (UCM) of hydrocarbons between about C₂₅-C₄₀ (i.e. the petroleum component), superimposed upon which are a series of peaks identified as pyrogenic PAH (i.e., fluoranthene (FO), pyrene (PYO), benzo(a)anthracene (BAA), chrysene (CO)). Oil tars are highly enriched in pyrogenic PAH, resulting in a product that contains both petroleum and pyrogenic PAH. (FLO/PYO ratios less than 1.0 distinguish oil tars from coal tars, which have FLO/PYO typically greater than 1.)

For comparison purposes, the GC/FID fingerprint for Blank (unused net) sample is shown in Figure 2. As expected, this sample is free of hydrocarbon contamination. The TPH value is non-detected.

Please do not hesitate to contact me if you have any questions regarding this letter.

² The elution order (e.g. retention time) of peaks on the chromatogram is a function of volatility with the most volatile compounds eluting early in the GC run (e.g., n-C₁₀), and the less volatile hydrocarbons eluting later in the GC run (e.g., n-C₃₀).



Sincerely,

A handwritten signature in black ink that reads "Kerylynn Krahforst". The signature is written in a cursive, flowing style.

Kerylynn Krahforst
Staff Scientist

Attachment 1: Data Deliverable

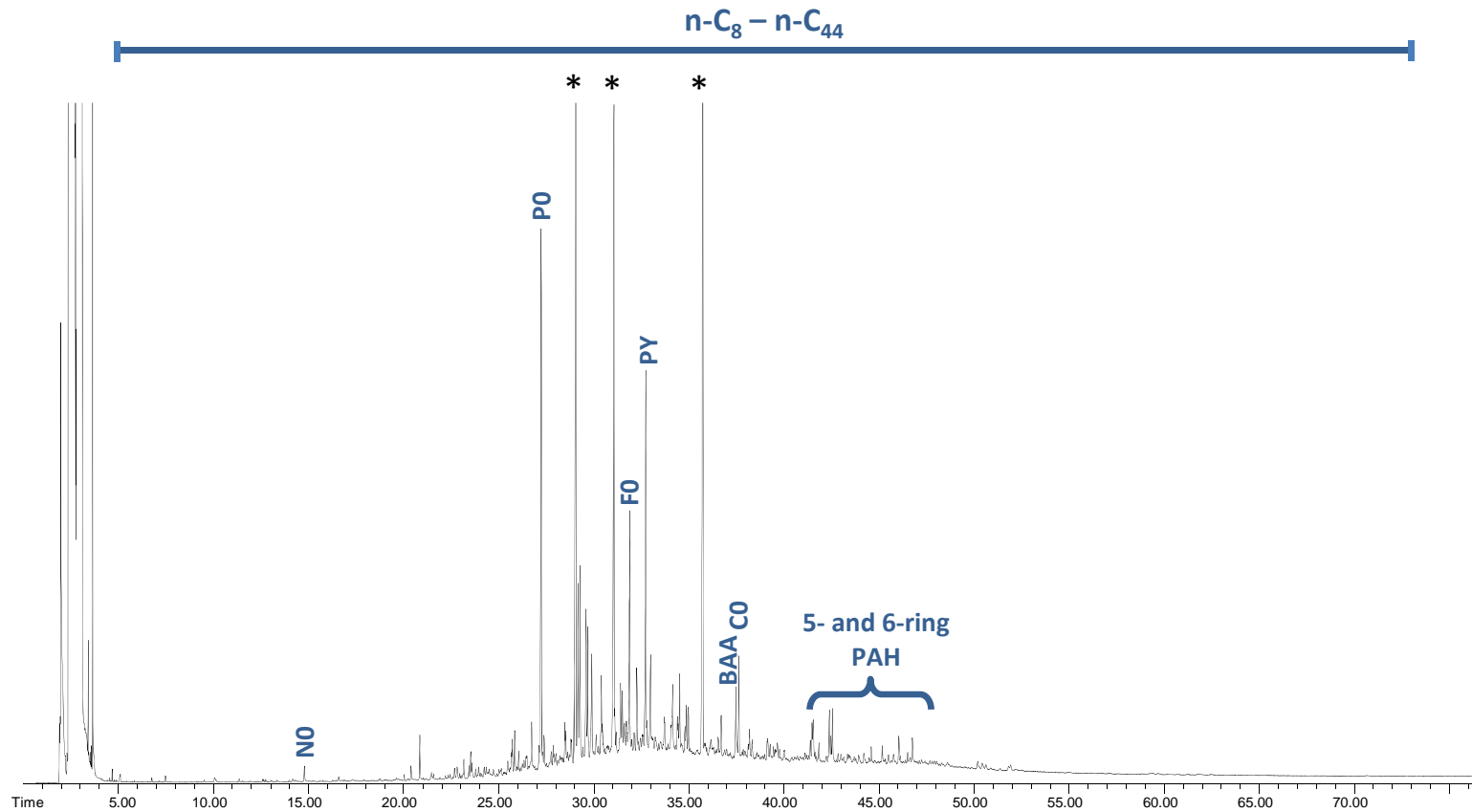


Figure 1. GC/FID chromatogram of Sheen-1
 (“*” Denotes internal standards and surrogates.)

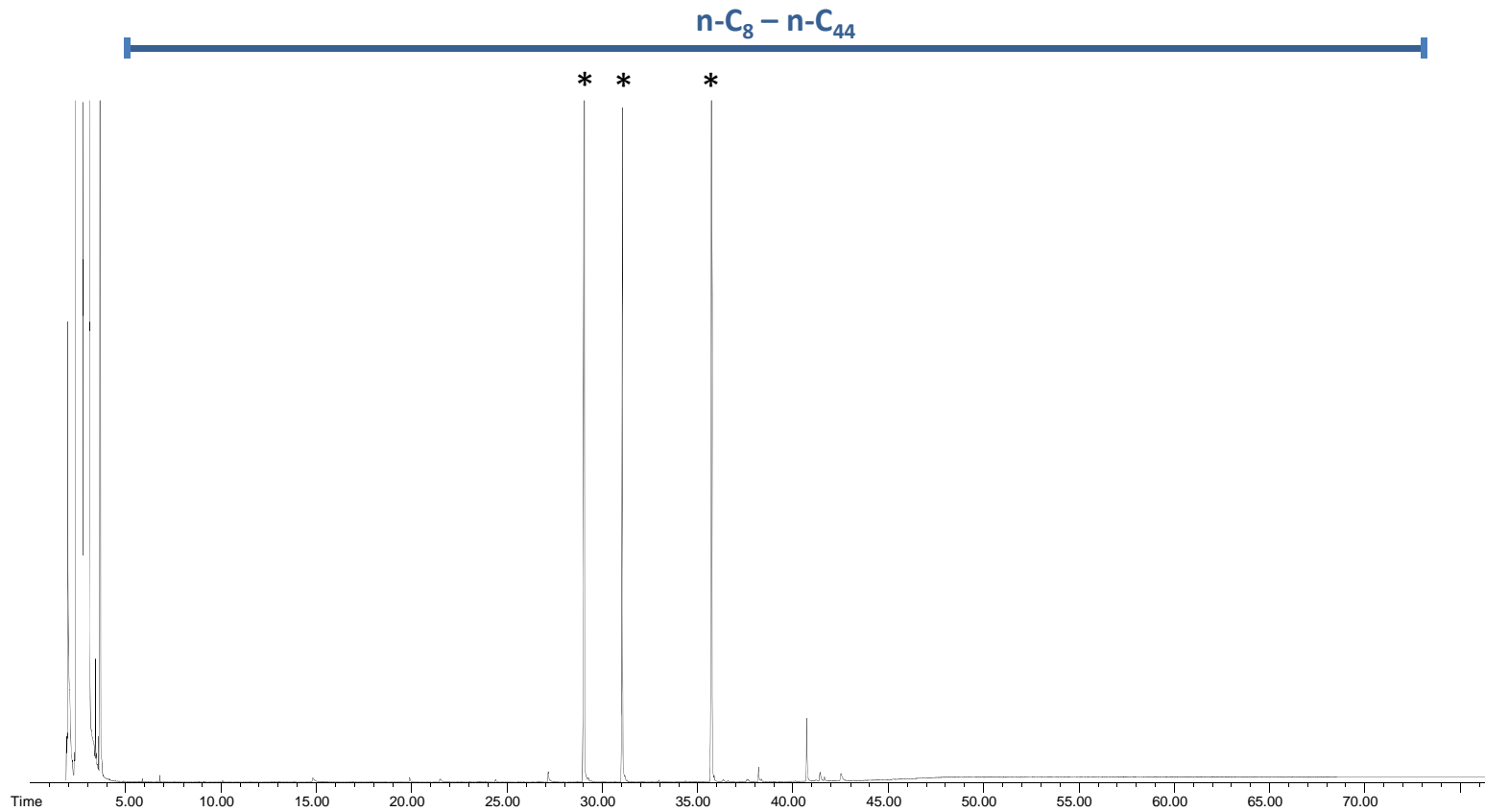


Figure 2. GC/FID chromatogram of Blank
 (“*” Denotes internal standards and surrogates.)



GZA GeoEnvironmental, Inc.

Chemical Fingerprinting at 642 Allens Avenue, Providence, RI

June 26, 2013

Chain of Custody



Chain of Custody

1306015

Environmental Forensics Practice LLC

| | | | | | | | | | | | | | | |
|--|-----------|----------------------------------|------|--------------------|-----------------------|-----------|----------------------------|----------------------------------|----------------|-----------------|-----------|--------------|-----|------------|
| Proj. No 33554 | | Proj. Name Providence LNG | | | | | | | | | | | | |
| SAMPLERS: Signature [Signature] | | | | | TOTAL # OF CONTAINERS | PRESERVED | ANALYSIS REQUESTED → | | | | | | PCB | Pesticides |
| "NUMBER OF CONTAINERS" | | | | | | | MATRIX (Oil/Soil/Water) | GC-FID-TPH (C ₆ +) | GCMS-Alkyl PAH | GCMS-Biomarkers | PLANO-VOA | Organic Lead | | |
| LAB ID | CLIENT ID | DATE | TIME | SAMPLE DESCRIPTION | | | | | | | | | | |
| -01 | Sheen-1 | 6-5-13 | 1050 | 1 | — | SHEEN | | | | | | X | | |
| *-02 | Blank | 6-5-13 | | 2 | — | | | | | | | | | |
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|-------------------------------------|---------------------|-------------------|-----------------------------------|---------------------|--------------------|
| Relinquished by: [Signature] | Date: 6-6-13 | Time: 0700 | Received by: [Signature] | Date: 6/6/13 | Time: 1245 |
| Relinquished by: [Signature] | Date: 6/6/13 | Time: 1605 | Received by: [Signature] | Date: 6/6/13 | Time: 1605 |
| Relinquished by: [Signature] | Date: 6/7/13 | Time: 0900 | Received by: Mansfield Lab | Date: 6/7/13 | Time: 04:00 |

Comments: Samples to be shipped to: Alpha Analytical-Woods Hole Lab
 320 Forbes Blvd.
 Mansfield, MA 02048
 Tel: (508) 822-9300
 Attn: Liz Porta

**unused sheens - one to be extracted as a trip blank - 6-7-13*

Send Results to Meg Kilpatrick e mkilpatrick@9za.com



Sample Delivery Group Form

Laboratory Job No: 1306015
Receipt Date/Time: 6-7-13 04:00

Client: Newfields
SDG Reviewer: [signature]

Samples Delivered By:

[X] Alpha Courier [] Client [] UPS [] FedEx [] Other
Bill of Laden: [] Yes [] Unavailable Tracking #: NA

Chain of Custody: [X] Present [] Absent

Custody Seals: [X] Absent [] Present/Intact [] Present/Broken

Cooler/Sample Temperature:

Is Ice/Blue Ice present? [X] Yes [] No [] N/A

Temp taken from: Temp Blank: (a) (b) (c) (d) (e)
IR Gun: (a) 3.6°C (b) (c) (d) (e)

IR Gun SN (circle one): 090512810 100311463

Was Temp: [X] 2-6 Celsius
[] <2 Celsius ... were samples frozen upon receipt? [] Yes [] No
[] >6 Celsius ... were samples delivered direct from site? [] Yes [] No

Containers Received:

[X] Intact [] Broken/Leaking
Sample IDs:
Sample IDs:

All Containers Accounted For? [X] Yes

[] No:

Extra Samples Received? [X] No

[] Yes:

Do Sample Labels and COC agree? [] Yes

[X] No: unused sheets were not labeled - we assigned the ID (Blank) upon receipt 6-7-13 [signature]

Are Samples in Appropriate Containers? [X] Yes

[] No:

Are samples rec'd within holding time? [X] Yes

[] No:

* Please note: the analysis of pH will always be performed beyond the regulatory-required holding time of 15 min. from the time of collection.

pH of samples upon receipt: [X] N/A [] <2 [] >12 and/or []

Are samples properly preserved? [] Yes [] No If No then.....

Initial pH= preserved In-House with [] HCL [] H2SO4 [] HNO3 [] NAOH <<Final pH = >>

Other Issues:

Chlorine Check: [] N/A [] Present [] Absent

VOA/VPH vials: [] Yes [X] No Preserved? [] Yes [] No If yes: [] HCL, []

Aqueous: vials contain head space? [] No [] Yes:

Soils: MeOH covering soil? [] Yes [] No:

Reagent H2O Preserved vials Frozen @ date/time:

Frozen by Client? [] No [] Yes @ date/time:

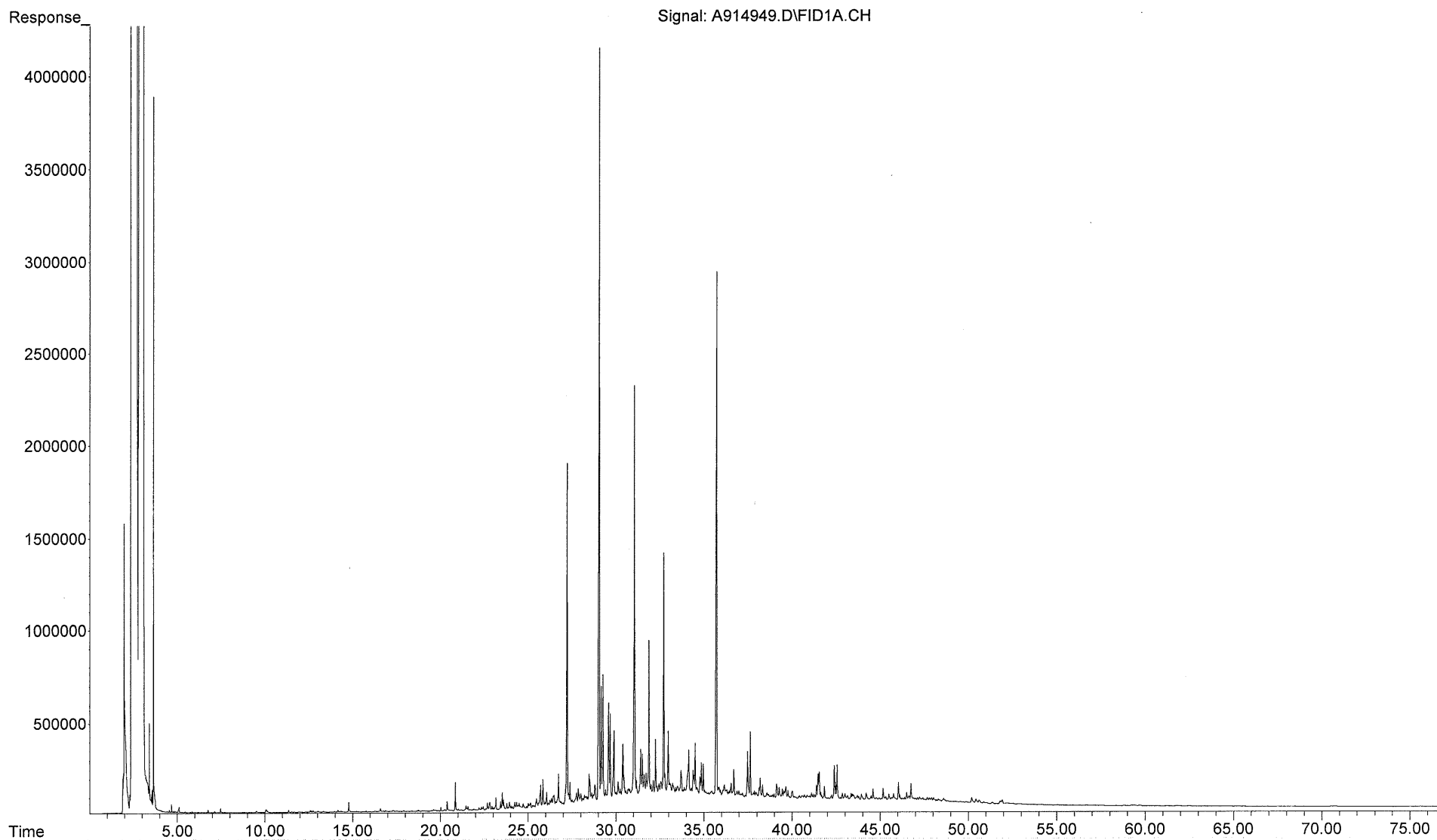
Was Client notified of any discrepancies listed above? [X] Yes [] No [] N/A

If Yes: Call Tracker #

GC/FID Chromatograms

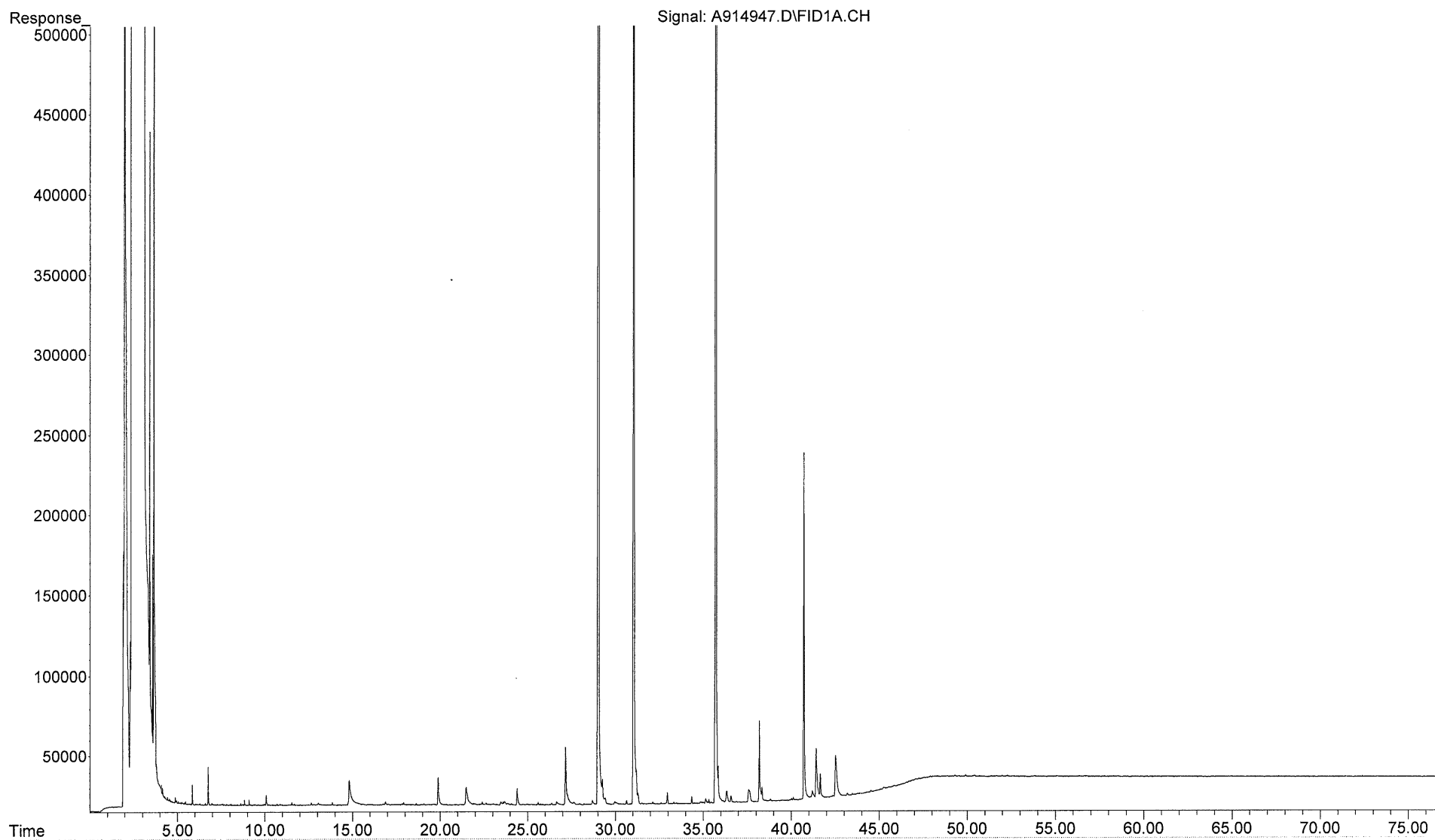
File :X:\nfeffwhg\2013 AWHL Data\GZA-642 Allens Ave\1306015\Prelim
... FID\A914949.D
Operator : DMP
Instrument : FID 9
Acquired : 13 Jun 2013 3:34 am using AcqMethod FID9A.M
Sample Name: 1306015-01
Misc Info : 1X

Sheen-1
1306015-01



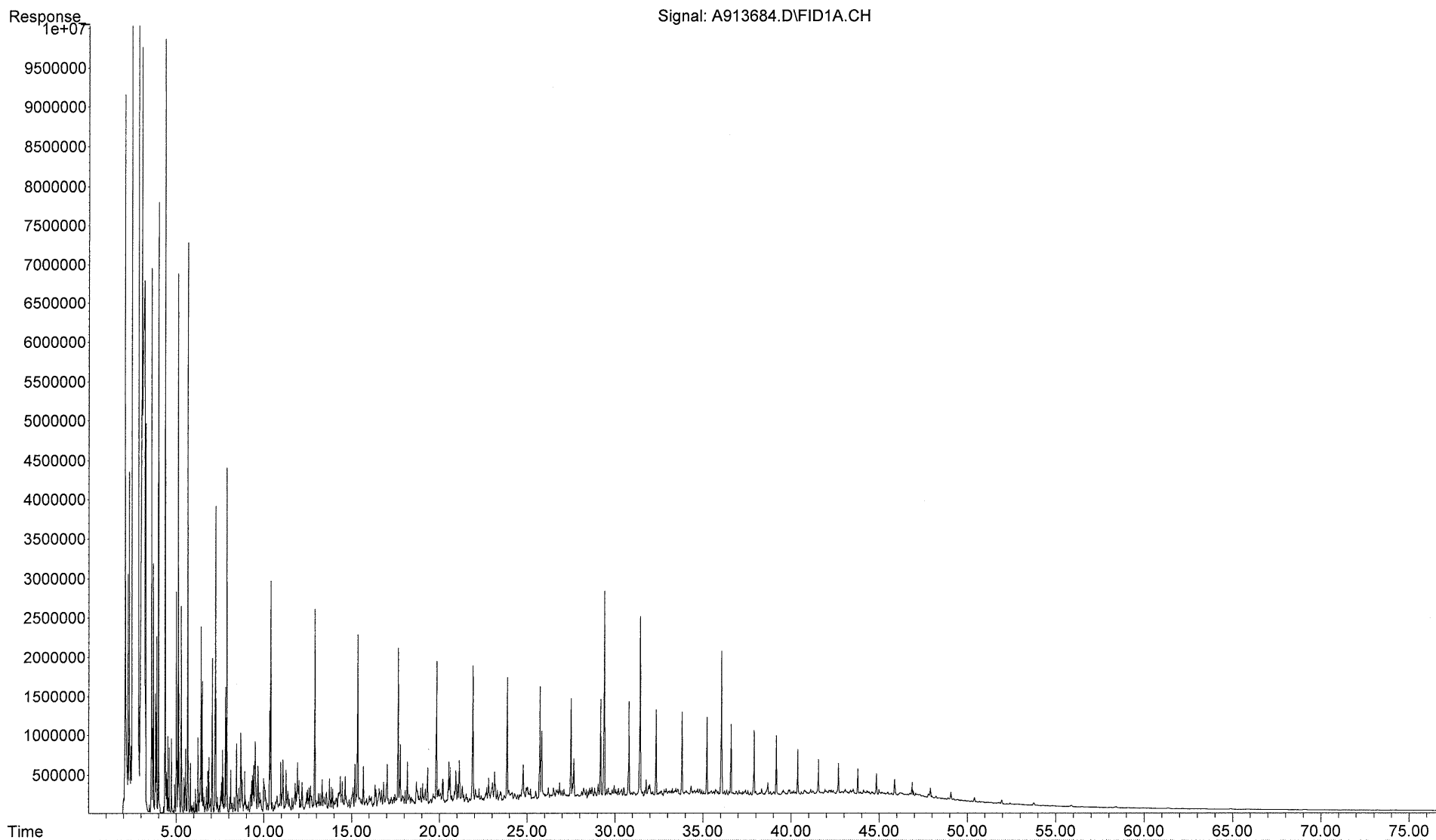
File :X:\nfeffwhg\2013 AWHL Data\GZA-642 Allens Ave\1306015\Prelim
... FID\A914947.D
Operator : DMP
Instrument : FID 9
Acquired : 13 Jun 2013 2:06 am using AcqMethod FID9A.M
Sample Name: 1306015-02
Misc Info : 1X

Field Blank Sheen
1306015-02



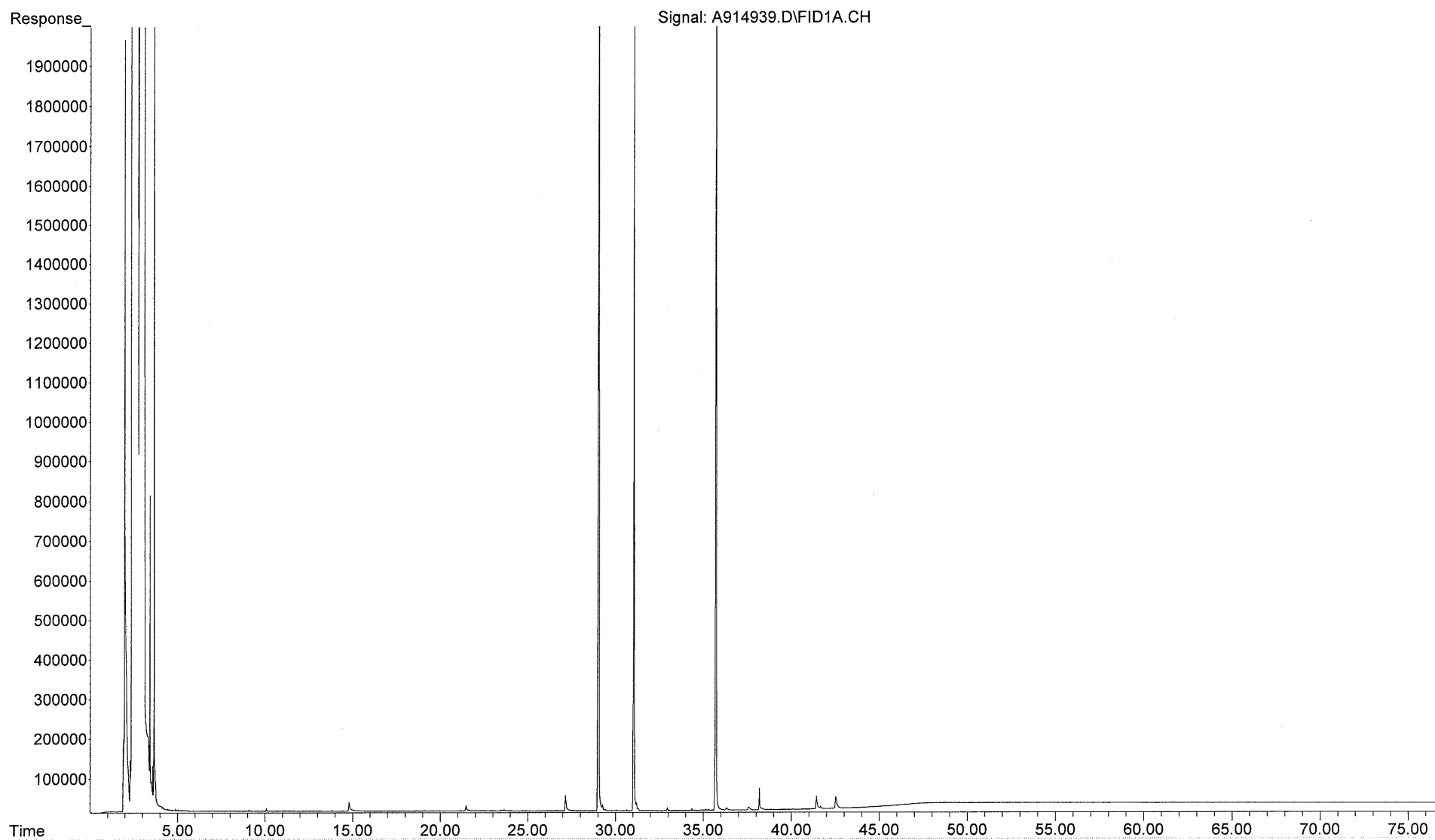
File :X:\nfef_whg\2013 AWHL Data\GZA-642 Allens Ave\1306015\Prelim
... FID\HC9041113F Data Files\A913684.D
Operator : JJT
Instrument : FID 9
Acquired : 12 Apr 2013 5:00 am using AcqMethod FID9A.M
Sample Name: TS041813ANC03
Misc Info : 1X WHAR22

**Reference Standard
North Slope Crude**



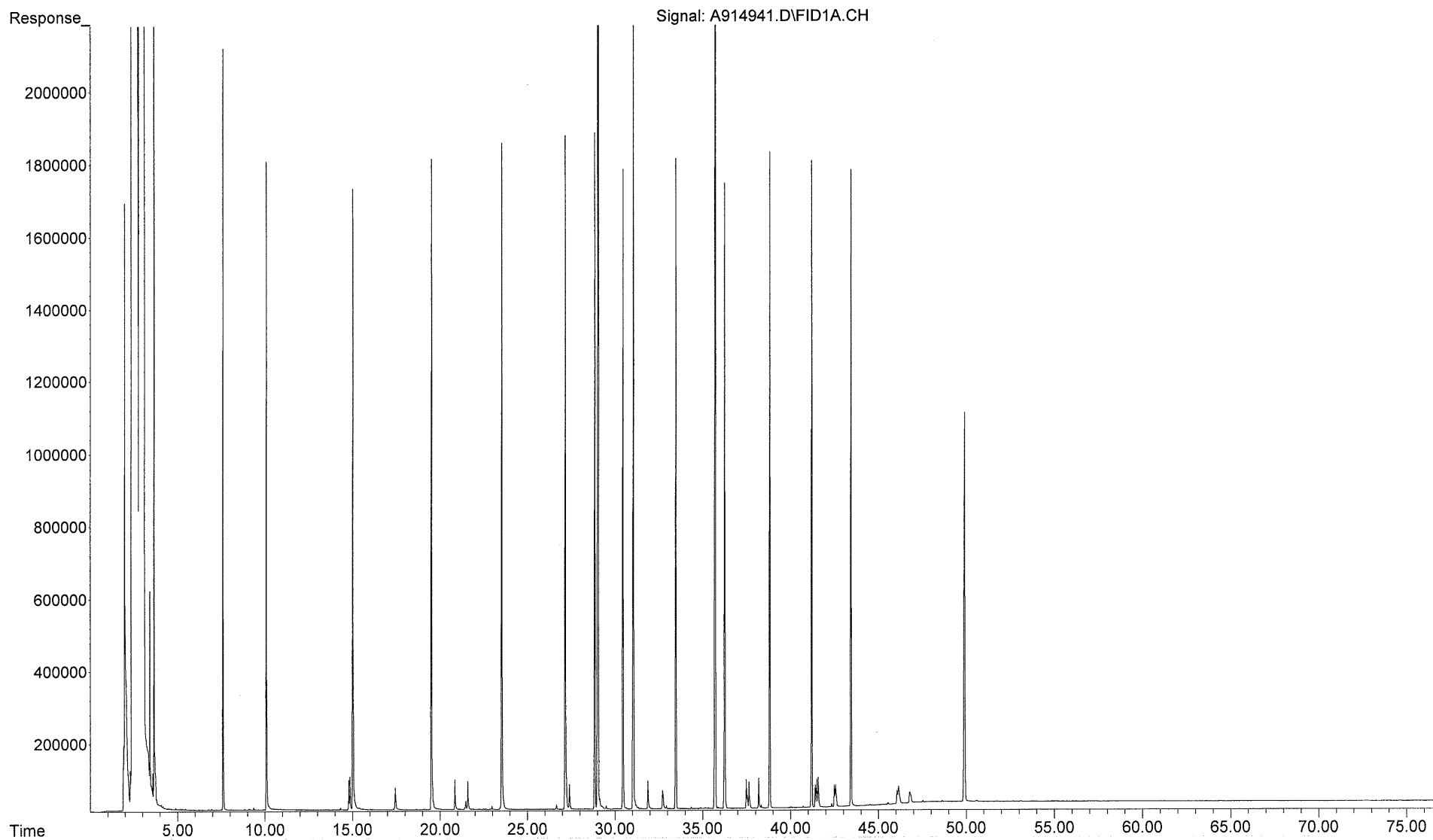
File :X:\nfeffwhg\2013 AWHL Data\GZA-642 Allens Ave\1306015\Prelim
... FID\A914939.D
Operator : DMP
Instrument : FID 9
Acquired : 12 Jun 2013 20:13 pm using AcqMethod FID9A.M
Sample Name: SO060713B01
Misc Info : 1X

Method Blank
SO060713B01



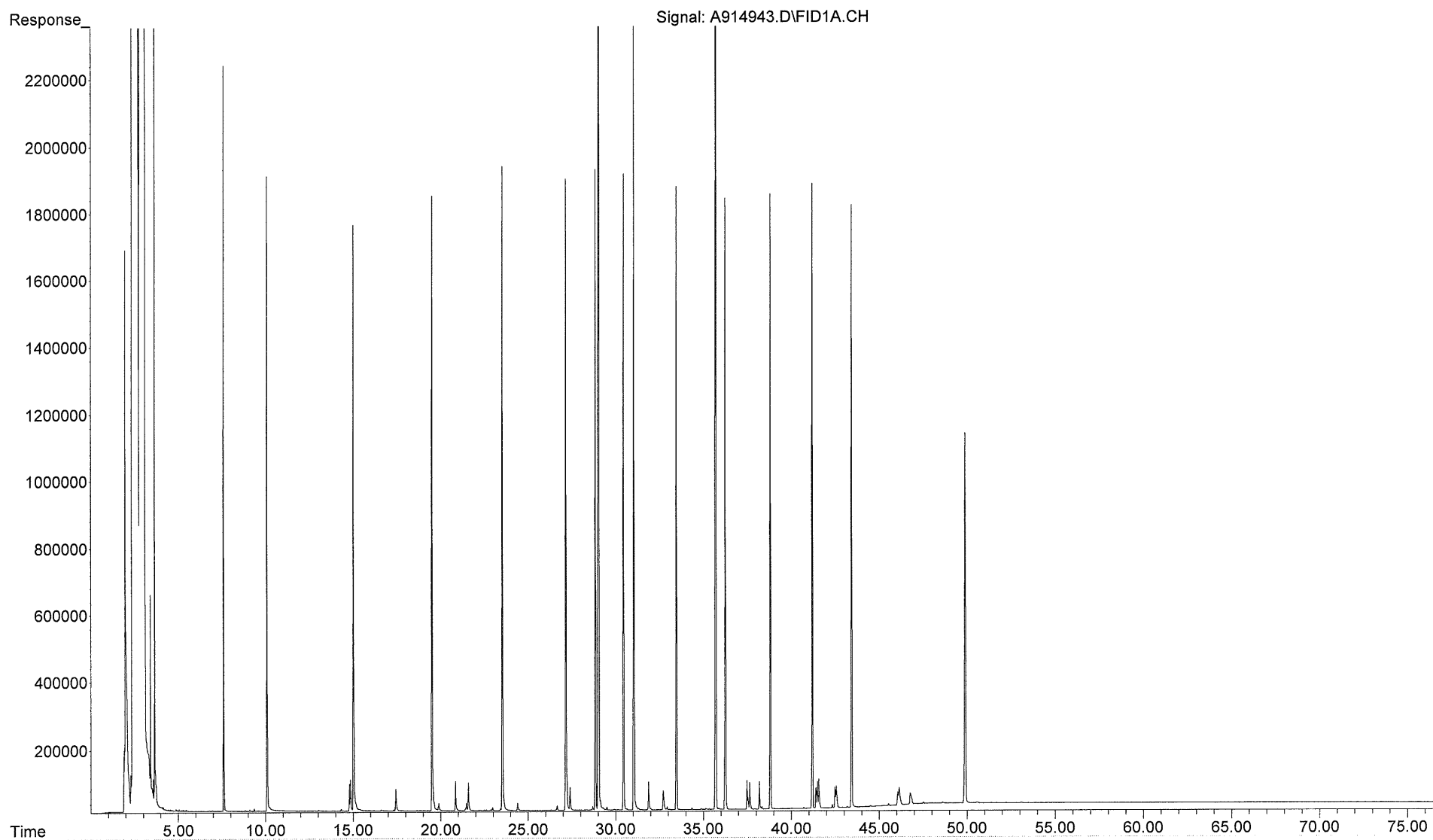
File :X:\nfef_whg\2013 AWHL Data\GZA-642 Allens Ave\1306015\Prelim
... FID\A914941.D
Operator : DMP
Instrument : FID 9
Acquired : 12 Jun 2013 21:41 pm using AcqMethod FID9A.M
Sample Name: SO060713LCS01
Misc Info : 1X

**Lab Control Sample
SO060713LCS01**



File :X:\nfeffwhg\2013 AWHL Data\GZA-642 Allens Ave\1306015\Prelim
... FID\A914943.D
Operator : DMP
Instrument : FID 9
Acquired : 12 Jun 2013 23:09 pm using AcqMethod FID9A.M
Sample Name: SO060713LCSD01
Misc Info : 1X

**Lab Control Sample Duplicate
SO060713LCSD01**



Data Tables

TPH Data

Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|--------------|
| Client ID | Method Blank |
| Lab ID | SO060713B01 |
| Matrix | Sheen |
| Reference Method | SHC |
| Batch ID | SO060713B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/07/2013 |
| Date Analyzed | 06/12/2013 |
| Sample Size (wet) | 1 |
| % Solid | 100.00 |
| File ID | A914939.D |
| Units | µg |
| Final Volume | 0.5 |
| Dilution | 1 |
| Reporting Limit | 16.5 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 1.99 J | 16.5 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 91 |
| d50-Tetracosane | 94 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | SO060713LCS01 |
| Matrix | Sheen |
| Reference Method | SHC |
| Batch ID | SO060713B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/07/2013 |
| Date Analyzed | 06/12/2013 |
| Sample Size (wet) | 1 |
| % Solid | 100.00 |
| File ID | A914941.D |
| Units | µg |
| Final Volume | 0.5 |
| Dilution | 1 |
| Reporting Limit | 16.5 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---------------------------------------|--------|-------|-------|-------------|-------------|-------------|
| SHC | C9 | n-Nonane (C9) | 13.5 S | 0.500 | 68 | 20.0 | 50 | 130 |
| SHC | C10 | n-Decane (C10) | 14.5 S | 0.500 | 72 | 20.0 | 50 | 130 |
| SHC | C12 | n-Dodecane (C12) | 16.1 S | 0.500 | 80 | 20.0 | 50 | 130 |
| SHC | C14 | n-Tetradecane (C14) | 16.1 S | 0.500 | 80 | 20.0 | 50 | 130 |
| SHC | C16 | n-Hexadecane (C16) | 17.6 S | 0.500 | 88 | 20.0 | 50 | 130 |
| SHC | C18 | n-Octadecane (C18) | 18.7 S | 0.500 | 94 | 20.0 | 50 | 130 |
| SHC | C19 | n-Nonadecane (C19) | 17.0 S | 0.500 | 85 | 20.0 | 50 | 130 |
| SHC | C20 | n-Eicosane (C20) | 17.3 S | 0.500 | 87 | 20.0 | 50 | 130 |
| SHC | C22 | n-Docosane (C22) | 17.1 S | 0.500 | 85 | 20.0 | 50 | 130 |
| SHC | C24 | n-Tetracosane (C24) | 17.1 S | 0.500 | 86 | 20.0 | 50 | 130 |
| SHC | C26 | n-Hexacosane (C26) | 16.6 S | 0.500 | 83 | 20.0 | 50 | 130 |
| SHC | C28 | n-Octacosane (C28) | 16.5 S | 0.500 | 83 | 20.0 | 50 | 130 |
| SHC | C30 | n-Triacontane (C30) | 16.3 S | 0.500 | 82 | 20.0 | 50 | 130 |
| SHC | C36 | n-Hexatriacontane (C36) | 13.9 S | 0.500 | 69 | 20.0 | 50 | 130 |
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 239 | 16.5 | | | | |

Surrogates (% Recovery)
 ortho-Terphenyl
 d50-Tetracosane

81
 83

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|-------------------------------|
| Client ID | Laboratory Control Sample Dup |
| Lab ID | SO060713LCSD01 |
| Matrix | Sheen |
| Reference Method | SHC |
| Batch ID | SO060713B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/07/2013 |
| Date Analyzed | 06/12/2013 |
| Sample Size (wet) | 1 |
| % Solid | 100.00 |
| File ID | A914943.D |
| Units | µg |
| Final Volume | 0.5 |
| Dilution | 1 |
| Reporting Limit | 16.5 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|---------------------------------------|--------|-------|-------|-------------|-------------|-------------|-----|-----------|
| SHC | C9 | n-Nonane (C9) | 15.0 S | 0.500 | 75 | 20.0 | 50 | 130 | 11 | 30 |
| SHC | C10 | n-Decane (C10) | 16.0 S | 0.500 | 80 | 20.0 | 50 | 130 | 10 | 30 |
| SHC | C12 | n-Dodecane (C12) | 18.0 S | 0.500 | 90 | 20.0 | 50 | 130 | 11 | 30 |
| SHC | C14 | n-Tetradecane (C14) | 18.1 S | 0.500 | 90 | 20.0 | 50 | 130 | 12 | 30 |
| SHC | C16 | n-Hexadecane (C16) | 19.7 S | 0.500 | 99 | 20.0 | 50 | 130 | 12 | 30 |
| SHC | C18 | n-Octadecane (C18) | 21.0 S | 0.500 | 105 | 20.0 | 50 | 130 | 12 | 30 |
| SHC | C19 | n-Nonadecane (C19) | 19.2 S | 0.500 | 96 | 20.0 | 50 | 130 | 12 | 30 |
| SHC | C20 | n-Eicosane (C20) | 19.4 S | 0.500 | 97 | 20.0 | 50 | 130 | 11 | 30 |
| SHC | C22 | n-Docosane (C22) | 19.2 S | 0.500 | 96 | 20.0 | 50 | 130 | 12 | 30 |
| SHC | C24 | n-Tetracosane (C24) | 19.2 S | 0.500 | 96 | 20.0 | 50 | 130 | 12 | 30 |
| SHC | C26 | n-Hexacosane (C26) | 18.6 S | 0.500 | 93 | 20.0 | 50 | 130 | 11 | 30 |
| SHC | C28 | n-Octacosane (C28) | 18.6 S | 0.500 | 93 | 20.0 | 50 | 130 | 12 | 30 |
| SHC | C30 | n-Triacontane (C30) | 18.3 S | 0.500 | 92 | 20.0 | 50 | 130 | 12 | 30 |
| SHC | C36 | n-Hexatriacontane (C36) | 15.9 S | 0.500 | 80 | 20.0 | 50 | 130 | 14 | 30 |
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 268 | 16.5 | | | | | | |

Surrogates (% Recovery)
 ortho-Terphenyl
 d50-Tetracosane

89
 91

Project Name: GZA-642 Allens Ave
Project Number:

| | |
|-------------------|--------------------------|
| Client ID | Alaska North Slope Crude |
| Lab ID | TS041813ANC03 |
| Matrix | Oil |
| Reference Method | SHC |
| Batch ID | N/A |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 04/12/2013 |
| Sample Size (wet) | 0.10102 |
| % Solid | 100.00 |
| File ID | A913684.D |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 3270 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---------------------------------------|--------|------|-------|-------------|-------------|-------------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 546000 | 3270 | 98 | 554993.00 | 65 | 135 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | | |
|-------------------|-------------|-------------|
| Client ID | Sheen-1 | Blank |
| Lab ID | 1306015-01 | 1306015-02 |
| Matrix | Sheen | Sheen |
| Reference Method | SHC | SHC |
| Batch ID | SO060713B01 | SO060713B01 |
| Date Collected | 06/05/2013 | 06/05/2013 |
| Date Received | 06/07/2013 | 06/07/2013 |
| Date Prepped | 06/07/2013 | 06/07/2013 |
| Date Analyzed | 06/13/2013 | 06/13/2013 |
| Sample Size (wet) | 1 | 1 |
| % Solid | 100.00 | 100.00 |
| File ID | A914949.D | A914947.D |
| Units | µg | µg |
| Final Volume | 0.5 | 0.5 |
| Dilution | 1 | 1 |
| Reporting Limit | 16.5 | 16.5 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 854 | 16.5 | U | 16.5 |

| | | |
|-------------------------|-----|----|
| Surrogates (% Recovery) | | |
| ortho-Terphenyl | 96 | 84 |
| d50-Tetracosane | 100 | 85 |

U: The analyte was analyzed for but not detected at the sample specific level reported
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
#: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
R: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDI
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

July 24, 2014

Ms. Margaret Kilpatrick
GZA GeoEnvironmental, Inc.
530 Broadway
Providence, Rhode Island 02909

Subject: Chemical Fingerprinting at 642 Allens Avenue, Providence, Rhode Island

Dear Ms. Kilpatrick,

NewFields is pleased to provide you with this letter report, summarizing the results of the analysis conducted on eleven soil samples and two solid samples collected during the latest field work along the northern portion of the National Grid and Motiva Enterprises property line located at 642 Allens Avenue in Providence, Rhode Island. The objective of this study was to determine the composition of the samples taken and observe the degree of weathering the material has undergone among the field samples collected.

Sampling and Analysis

The field samples were collected between May 22, 2014 and June 4, 2014 by GZA GeoEnvironmental, Inc. and were packed on ice and transported by Alpha courier to NewFields' alliance laboratory, Alpha Analytical Laboratory (Alpha) for chemical fingerprinting analysis. The samples were received intact and in good condition. Upon receipt, the samples were logged into Alpha's laboratory information management system (LIMS) and given a unique laboratory identifications. The samples were stored in a limited access refrigerator at 4°C until processed by the laboratory staff for chemical fingerprinting analysis. The unexpended samples are currently being archived frozen. Soil and solid samples were collected at the locations identified in Figure 1. Summary information of the samples collected is provided below. Chain-of-custody documentation is provided in Attachment 1.

| Lab ID | Client ID | Matrix | Date Collected | Date Received |
|------------|--------------|--------|----------------|---------------|
| 1405021-01 | GZ-305S S-5 | Soil | 5/22/2014 | 5/23/2014 |
| 1405021-02 | GZ-306S S-4 | Soil | 5/22/2014 | 5/23/2014 |
| 1405021-03 | GZ-306S S-5 | Soil | 5/22/2014 | 5/23/2014 |
| 1405021-04 | GZ-309D S-4 | Soil | 5/20/2014 | 5/23/2014 |
| 1406002-01 | GZ-312D S-4 | Soil | 5/23/2014 | 5/30/2014 |
| 1406002-02 | GZ-313D S-10 | Soil | 5/27/2014 | 5/30/2014 |
| 1406002-03 | GZ-304D S-5 | Solid | 5/28/2014 | 5/30/2014 |
| 1406002-04 | GZ-304D S-7 | Solid | 5/28/2014 | 5/30/2014 |
| 1406002-05 | GZ-303D S-8 | Soil | 5/28/2014 | 5/30/2014 |
| 1406002-06 | GZ-302D S-10 | Soil | 5/29/2014 | 5/30/2014 |
| 1406010-01 | GZ-307SR S-6 | Soil | 6/3/2014 | 6/6/2014 |
| 1406010-02 | GZ-308SR S-4 | Soil | 6/4/2014 | 6/6/2014 |
| 1406010-03 | GZ-310 S-5A | Soil | 6/4/2014 | 6/6/2014 |

The soil and solid samples were analyzed using a method designed specifically for the forensic analysis of petroleum¹:

- (1) *Total Petroleum Hydrocarbons (TPH) and Fingerprinting*: a modified EPA Method 8015B gas chromatography method was used to determine the total petroleum hydrocarbon (TPH) concentration (C₈ – C₄₄). A high resolution gas chromatogram produced by this method provides a detailed “fingerprint” of the hydrocarbons that compose samples. This analysis allowed for the characterization of the general boiling range(s) and type(s) of petroleum or other hydrocarbons present in the samples, as well as the degree(s) of weathering a fugitive product has undergone in the environment.

Results and Discussion

The complete Alpha Environmental Testing Report (ETR) including all sample preparation data, instrument calibrations, QC data and chromatograms is maintained on file by NewFields (ETR 1405021, 1406002 and 1406010). A data summary containing pertinent gas chromatograms and tabulated results of all chemical analyses and quality control results may be found as Attachment 1 to this letter.

All analyses were conducted following established laboratory data quality objectives (DQOs). Appropriate laboratory quality control (QC) samples were processed along with the samples. The QC samples included laboratory method blank (B), laboratory control samples (LCS/LCSD), sample duplicate (D), and a reference materials oil. Resulting data underwent several levels of review. NewFields performed an independent review of the data generated by Alpha Laboratory, to ensure that data quality objectives were satisfied, and that the results were traceable to the raw data. NewFields also reviewed the data for compliance with the laboratory’s documented procedures and established laboratory quality objectives. The data were found to be accurate and traceable, and met laboratory established method data quality objectives.

Compositional Features

The gas chromatogram, or “fingerprint”, is the instrument output that defines the distribution of the petroleum hydrocarbons in each sample usually from most volatile to least volatile². The peaks that appear in the chromatogram represent discrete compounds, the height of which is proportional to the abundance of those compounds in the petroleum. Every petroleum product has its own unique distribution of peaks (individual hydrocarbons). It is this fundamental gas chromatographic feature – the GC “fingerprint” – that allows the environmental chemist to identify and distinguish one petroleum product from another.

Characterization of Field Samples

The field samples were assembled into three groups based on review of the GC/FID Fingerprints as shown in Figures 2, 3 and 4.

¹ Douglas, G.D., Emsbo-Mattingly, S.D., Stout, S.A., Uhler, A.D., and McCarthy, K.J. (2007) Chemical fingerprinting of hydrocarbons and polychlorinated biphenyls. In: *Introduction to Environmental Forensics, 2nd Ed.*, B. Murphy and R. Morrison, Eds., Academic Press, New York, pp.317-459.

² The elution order (e.g. retention time) of peaks on the chromatogram is a function of volatility with the most volatile compounds eluting early in the GC run (e.g., n-C₁₀), and the less volatile hydrocarbons eluting later in the GC run (e.g., n-C₃₀).

The GC/FID fingerprints assembled in Figure 2 include field samples (GZ-304D S-5, GZ-304D S-7, GZ-306S S-4, GZ-310 S-5A, GZ-313D S-10). These GC fingerprints show samples are composed exclusively of tar impacted hydrocarbons. The dominant carbon range extends from C9 to C40+ range. The dominant hydrocarbons present are the polycyclic aromatic hydrocarbons (PAH), particularly parent (non-alkylated) PAH compounds commonly observed in tar impacted samples. The tar material present in these field samples vary in degrees of weathering. Refer to Table 1 for the compound identifications.

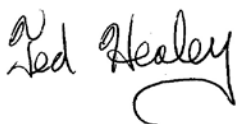
The GC/FID fingerprints assembled in Figure 3 include field samples (GZ-305S S-5 and GZ-306S S-5). These GC/FID fingerprints show samples are composed of a mixture of middle distillate, heavy petroleum and tar. The dominant carbon ranges that make up these materials can be identified by the bimodal unresolved complex mixture (UCM) in the C9 to C22 range and C22 to C40+ range. The complete absence of the weather susceptible normal alkanes and less weather susceptible isoprenoids in both the middle distillate range and heavy petroleum range is evidence for a highly weathered hydrocarbon material(s). Also observed in the chromatograms was the remaining dominant hydrocarbons present being the polycyclic aromatic hydrocarbons, particularly parent (non-alkylated) PAH compounds commonly observed in tar impacted samples albeit at lower concentrations found in field samples displayed in Figure 2 but indeed present. The tar component also being highly weathered.

The GC/FID fingerprints assembled in Figure 4 include field samples (GZ-302D S-10, GZ-303D S-8, GZ-307SR S-6, GZ-308SR S-4, GZ-309D S-4, GZ-312D S-4). These GC/FID fingerprints show samples are composed largely of a middle distillate and to a lesser extent heavy petroleum. The dominant carbon ranges that make up these materials can be identified by the bimodal unresolved complex mixture (UCM) in the C9 to C22 range and C22 to C40+ range. The proportions of middle distillate to heavy petroleum vary amongst field samples where sample GZ-302D S-10 is predominantly middle distillate while other samples have larger proportions of the heavy petroleum. The complete absence of the weather susceptible normal alkanes and less weather susceptible isoprenoids in both the middle distillate range and heavy petroleum range is evidence for a highly weathered hydrocarbon material(s).

In order to determine if the hydrocarbon materials identified in these thirteen field samples are similar in chemical makeup or of varying character, further analyses (i.e. PAH and Biomarker Quantification and Fingerprinting) would need to be performed for further detailed identification.

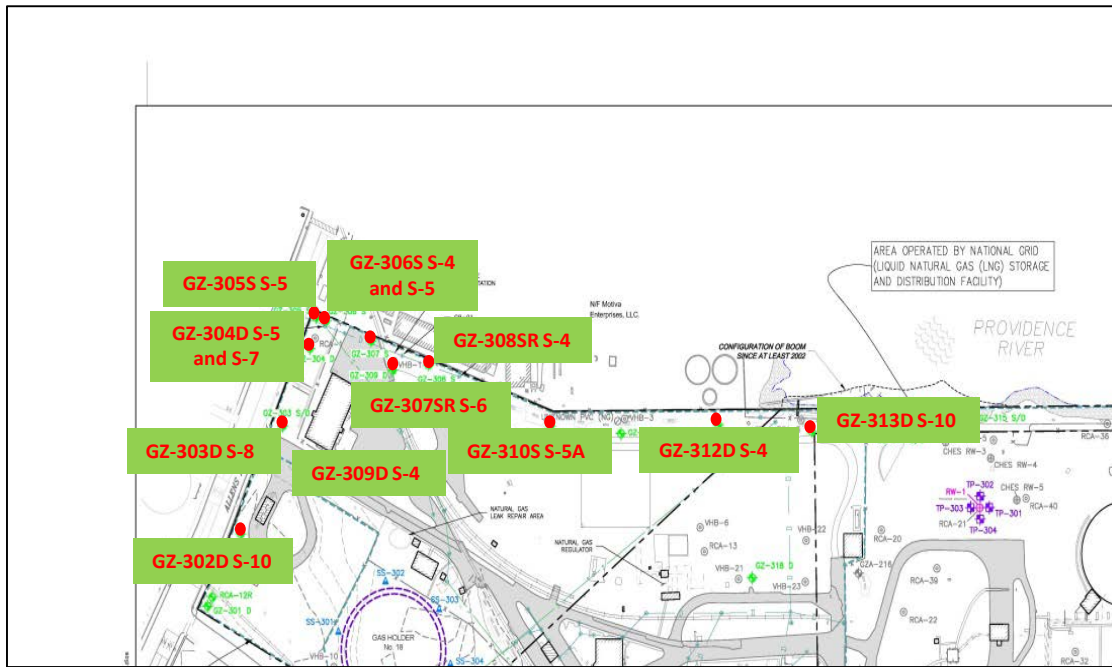
If you have any questions regarding this report, please do not hesitate to call me at (781) 681-5040 x109.

Sincerely,



Ted Healey
Staff Scientist

Attachment 1: Data Deliverable



Northern Property Border Sampling Locations

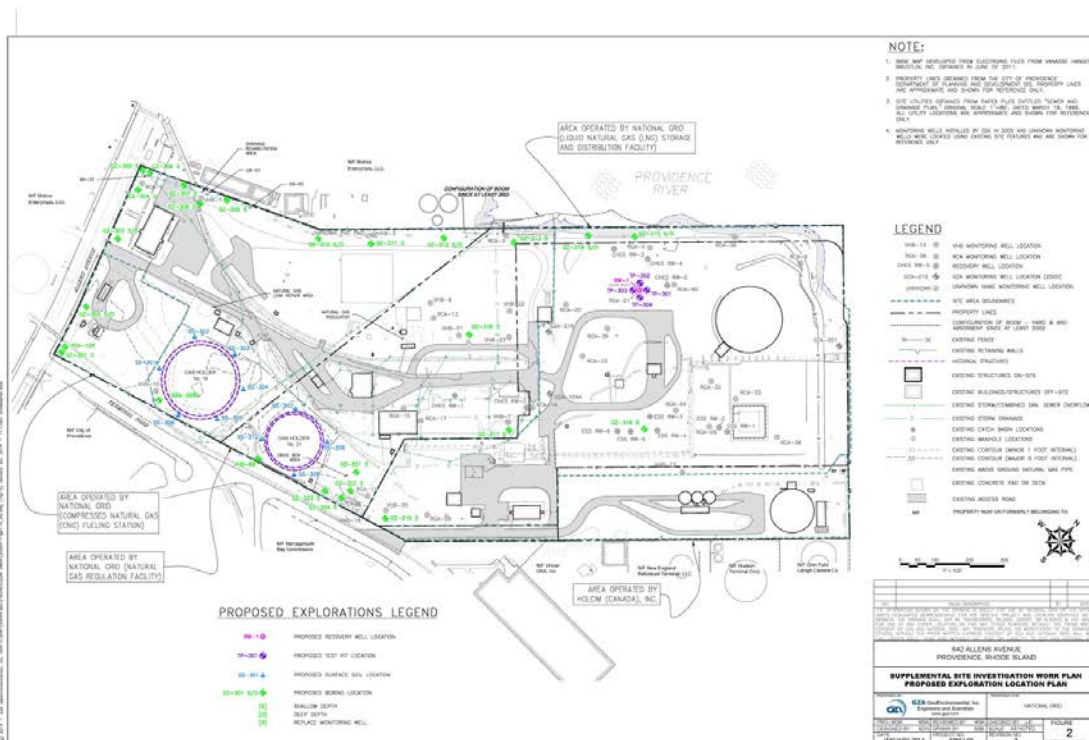


Figure 1. Site Map National Grid Site (642 Allens Ave, Providence, RI)

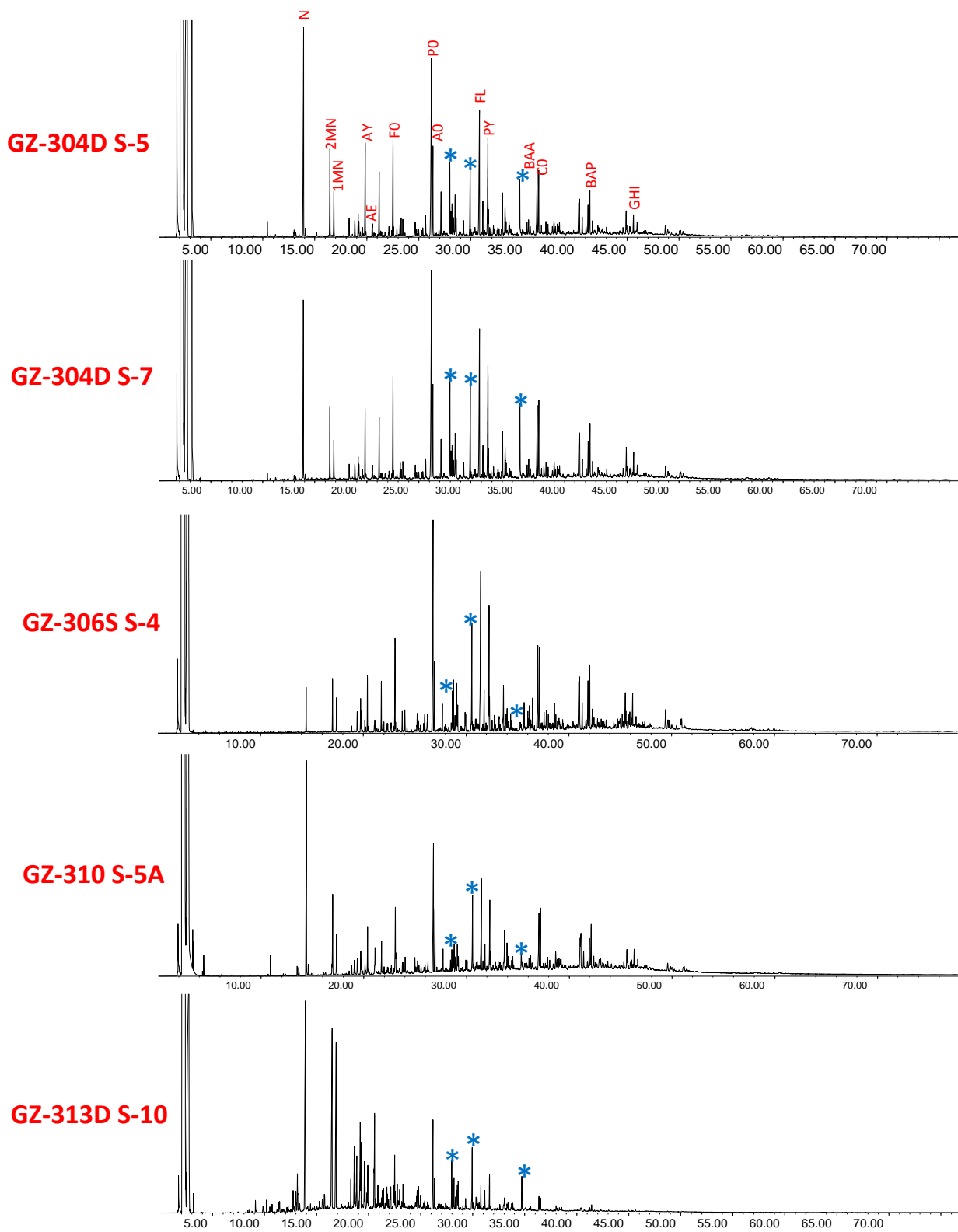


Figure 2. Field Samples Containing Tar Impacted Signatures

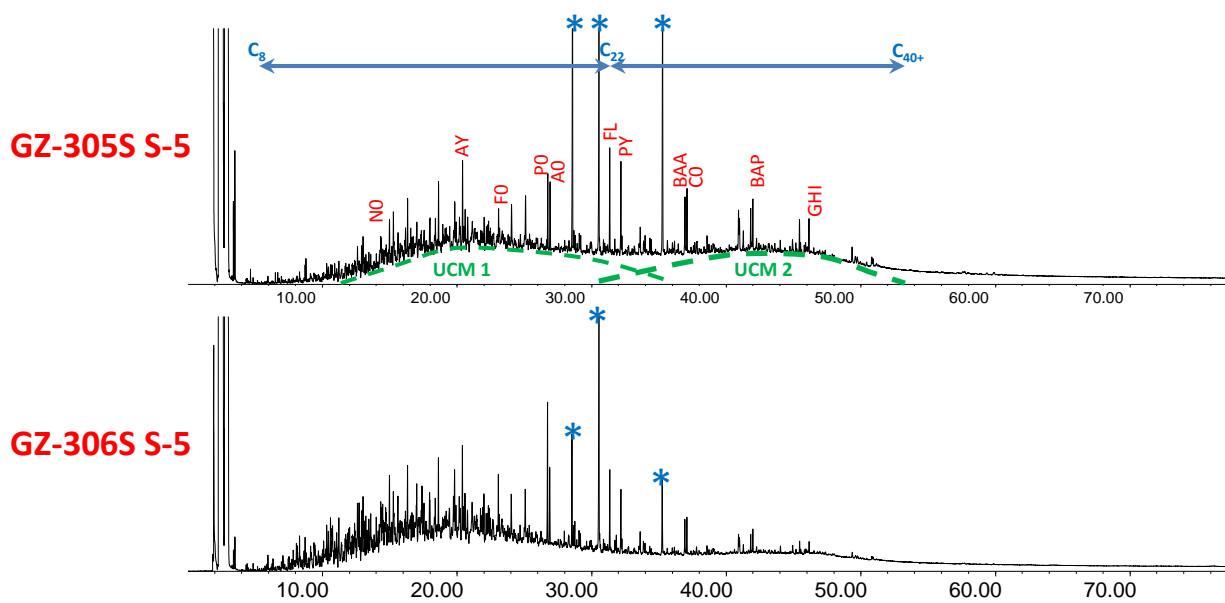


Figure 3. Field Samples Containing Middle Distillate, Heavy Petroleum and Tar Mixtures

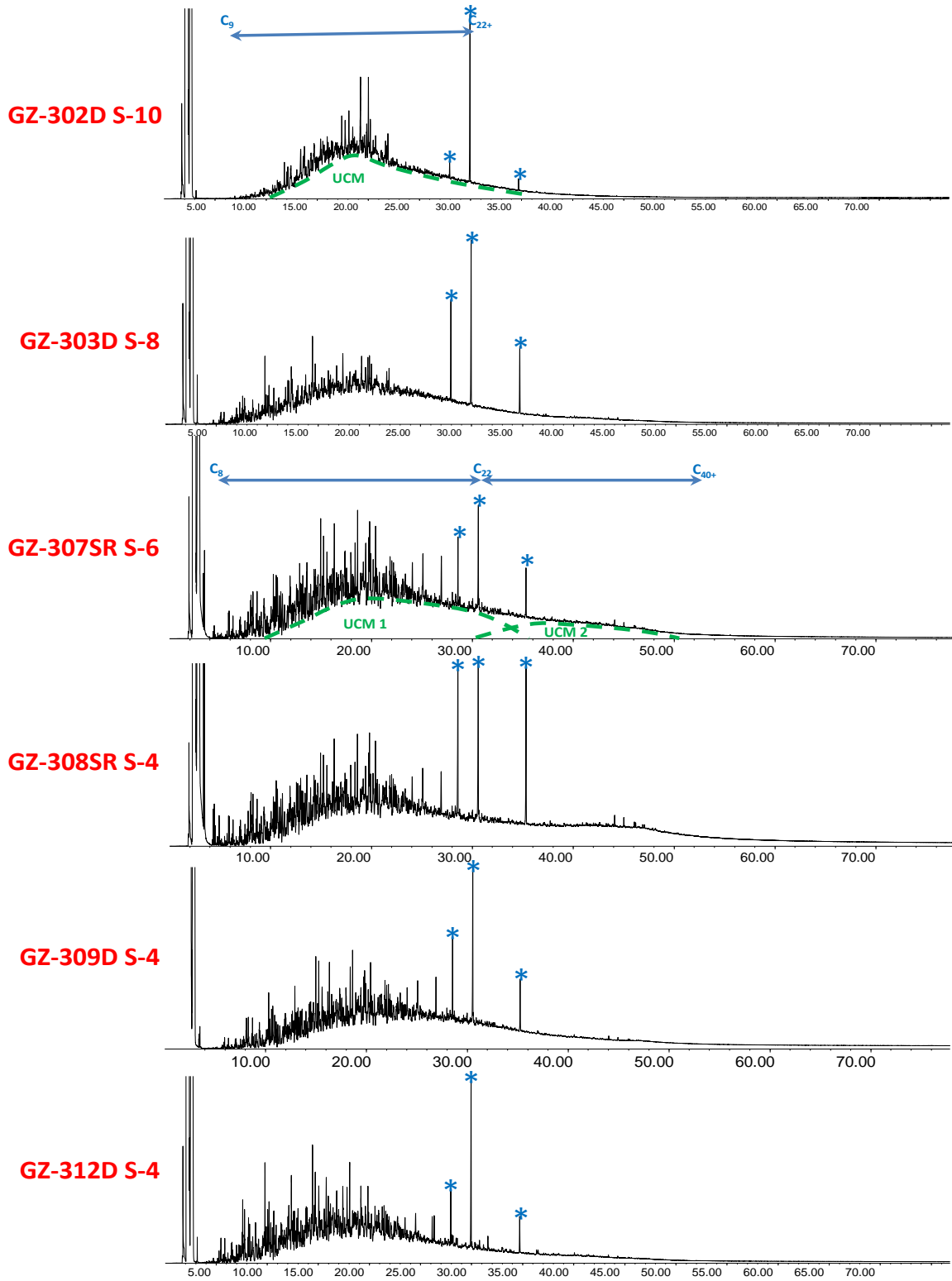


Figure 4. Field Samples Containing Middle Distillate and Heavy Petroleum Mixtures

Table 1. GC/FID Chromatogram Tentatively Identified Compounds and Abbreviations

| Abbr. | Compound |
|--------------|---------------------|
| N | Naphthalene |
| 2MN | 2-Methylnaphthalene |
| 1MN | 1-Methylnaphthalene |
| AY | Acenaphthylene |
| AE | Acenaphthene |
| F0 | Fluorene |
| P0 | Phenanthrene |
| A0 | Anthracene |
| FL | Fluoranthene |
| PY | Pyrene |
| BAA | Benzo(a)anthracene |
| C0 | Chrysene |
| BAP | Benzo(a)pyrene |
| GHI | Benzo(g,h,i)pyrene |

Attachments



Chain of Custody

HOLD ALL SAMPLES

Environmental Forensics Practice LLC

1405016
1405021

| | | | | | | | | | | | | | | | | | | |
|---|--------------|--|-----------|-----------------------------------|------|--------------------|-------|--|---|----------------------------|---------------------|----------------|-----------------|-----------|--------------|--------|-----|------------|
| Proj. No 32554 | | Proj. Name 642 ALLENS AVENUE M6P | | | | | | ANALYSIS REQUESTED "NUMBER OF CONTAINERS" → | | MATRIX (Oil/Soil/Water) | GC-FID-TPH (Cat) | GCMS-Alkyl PAH | GCMS-Biomarkers | PIANO-VOA | Organic Lead | METALS | PCB | Pesticides |
| SAMPLERS: Signature <i>[Signature]</i> | | TOTAL # OF CONTAINERS | PRESERVED | SAMPLE DESCRIPTION | | | | | | | | | | | | | | |
| LAB ID | CLIENT ID | DATE | TIME | | | | | | | | | | | | | | | |
| 1405016-01 | GE-311D S-6B | 5/21/14 | 915 | 1 | NONE | | | S | X | | | | | | | | | |
| 02 | GE-311D S-8 | 5/21/14 | 1000 | ↓ | ↓ | | | ↓ | ↓ | | | | | | | | | |
| 03 | GE-305S S-5 | 5/22/14 | 1000 | ↓ | ↓ | 1405021-01 5:29:14 | | ↓ | ↓ | | | | | | | | | |
| 04 | GE-306S S-4 | 5/22/14 | 1330 | ↓ | ↓ | -02 80 | | ↓ | ↓ | | | | | | | | | |
| 05 | GE-306S S-5 | 5/22/14 | 1345 | ↓ | ↓ | -03 ↓ | | ↓ | ↓ | | | | | | | | | |
| Relinquished by: <i>[Signature]</i> | | Date | Time | Received by: <i>[Signature]</i> | | Date | Time | | | Date | Time | | | | | | | |
| Relinquished by: <i>[Signature]</i> | | 5/22/14 | 1800 | Received by: <i>[Signature]</i> | | 5-23-14 | 15:40 | | | Date | Time | | | | | | | |
| Relinquished by: <i>[Signature]</i> | | 5-23-14 | 16:20 | Received by: <i>[Signature]</i> | | 5-23-14 | 16:20 | | | Date | Time | | | | | | | |
| Relinquished by: | | Date | Time | Received by: | | Date | Time | | | | | | | | | | | |
| Comments: Samples to be shipped to: | | Alpha Analytical-Woods Hole Lab 320 Forbes Blvd. Mansfield, MA 02048 Tel: (508) 822-9300 Attn: Liz Porta | | EMAIL MARGARET.KILPATRICK@GEA.COM | | | | | | | | | | | | | | |

94.01.99



Chain of Custody

Environmental Forensics Practice LLC

HOLD ALL SAMPLES

1405016
1405021

| Proj. No 33554 | | Proj. Name 642 ALLEN AVENUE MBP | | | | ANALYSIS REQUESTED → "NUMBER OF CONTAINERS" | | MATRIX (Oil/Soil/Water) | GC-FID-TPH (Gr) | GCMS-Alkyl PAH | GCMS-Biomarkers | PIANO-VOA | Organic Lead | METALS | PCB | Pesticides |
|--|---------------|------------------------------------|------|-----------------------|-----------------------|--|--------------------|----------------------------|--------------------|----------------|-----------------|-----------|--------------|--------|-----|------------|
| SAMPLERS: Signature <i>Sophia Pulcut</i> | | | | | TOTAL # OF CONTAINERS | PRESERVED | SAMPLE DESCRIPTION | | | | | | | | | |
| LAB ID | CLIENT ID | DATE | TIME | TOTAL # OF CONTAINERS | PRESERVED | | | | | | | | | | | |
| 1405016-06 | 62-3075 S-4 | 5/19/14 | 1115 | 1 | None | | S | X | | | | | | | | |
| 07 | 62-3075 S-5 | | 1130 | | | | | | | | | | | | | |
| 08 | 62-3075 S-6 | | 1140 | | | | | | | | | | | | | |
| 09 | 62-3075 S-7A | | 1150 | | | | | | | | | | | | | |
| 10 | 62-3075 S-8 | | 1200 | | | | | | | | | | | | | |
| 11 | 62-3075 S-9 | | 1215 | | | | | | | | | | | | | |
| 12 | 62-3075 S-10A | | 1230 | | | | | | | | | | | | | |
| 13 | 62-3085 S-3 | | 1345 | | | | | | | | | | | | | |
| 14 | 62-3085 S-4 | | 1400 | | | | | | | | | | | | | |
| 15 | 62-3085 S-5 | | 1410 | | | | | | | | | | | | | |
| 16 | 62-3085 S-6 | | 1415 | | | | | | | | | | | | | |
| 17 | 62-3085 S-10 | | 1520 | | | | | | | | | | | | | |
| 18 | 62-3085 S-11 | | 1530 | | | | | | | | | | | | | |
| 19 | 62-309D S-4 | 5/20/14 | 1200 | | | 1405021-04 S-29.04.20 | | | | | | | | | | |
| 20 | 62-309D S-5 | 5/20/14 | 1210 | | | | | | | | | | | | | |
| 21 | 62-311D S-6A | 5/21/14 | 915 | | | | | | | | | | | | | |
| Relinquished by: <i>Sophia Pulcut</i> | | | | Date: 5/22/14 | Time: 1800 | Received by: <i>Plant AAL</i> | | | | Date: 5-22-14 | Time: 15:40 | | | | | |
| Relinquished by: <i>Plant AAL</i> | | | | Date: 5-23-14 | Time: 16:20 | Received by: <i>Margaret Kilpatrick</i> | | | | Date: 5-23-14 | Time: 16:20 | | | | | |
| Relinquished by: | | | | Date: | Time: | Received by: | | | | Date: | Time: | | | | | |
| Comments: Samples to be shipped to: Alpha Analytical-Woods Hole Lab 320 Forbes Blvd. Mansfield, MA 02048 Tel: (508) 822-9300 Attn: Liz Porta | | | | | | | | | | | | | | | | |

EMAIL MARGARET.KILPATRICK@GZA.COM

95 of 99



Sample Delivery Group Form

Laboratory Job No: 1405016, 1405021
Receipt Date/Time: 5-23-11 4:20

Client: Mansfield
SDG Reviewer: [Signature]

Samples Delivered By: Alpha Courier Client UPS FedEx Other _____
Bill of Lading: Yes Unavailable Tracking #: NA
Chain of Custody: Present Absent: _____
Custody Seals: Absent Present/Intact Present/Broken

Cooler/Sample Temperature:
Is Ice/Blue Ice present? Yes No N/A _____
Temp taken from: Temp Blank: (a) _____ (b) _____ (c) _____ (d) _____ (e) _____
IR Gun: (a) 2.7 (b) _____ (c) _____ (d) _____ (e) _____
IR Gun SN (circle one): 090512810 100311463
Was Temp: 2-6 Celsius
 <2 Celsius ... were samples frozen upon receipt? Yes No
 >6 Celsius ... were samples delivered direct from site? Yes No

Containers Received: Intact
 Broken/Leaking Sample IDs: _____
Sample IDs: _____

All Containers Accounted For? Yes
 No: _____
Extra Samples Received? No
 Yes: _____
Do Sample Labels and COC agree? Yes
 No: discrepancies between COC + labels - COC used for login - see email 5-28-11
Are Samples in Appropriate Containers? Yes
 No: _____
Are samples rec'd within holding time? Yes
 No: _____
* Please note: the analysis of pH will always be performed beyond the regulatory-required holding time of 15 min. from the time of collection.

pH of samples upon receipt: N/A <2 >12 and/or _____
Are samples properly preserved? Yes No If No then.....
Initial pH= _____ preserved In-House with HCL H₂SO₄ HNO₃ NaOH <<Final pH = _____>>
Other Issues: _____
Chlorine Check: N/A Present Absent

VOA/VPH vials: Yes No Preserved? Yes No If yes: HCL, _____
Aqueous: vials contain head space? No Yes: _____
Soils: MeOH covering soil? Yes No: _____
Reagent H₂O Preserved vials Frozen @ date/time: _____
Frozen by Client? No Yes @ date/time: _____

Was Client notified of any discrepancies listed above? Yes No N/A

If Yes: Call Tracker # _____
Form No.: 101-12

Alpha Analytical
Mansfield, MA

06/15/2011



Susan O'Neil <soneil@alphalab.com>

FW: 642 Allens Ave Samples

Ted Healey <ehealey@newfields.com>
 To: Susan O'Neil <soneil@alphalab.com>

Wed, May 28, 2014 at 10:23 PM

Sue,

Here is the updated IDs from Friday and request for pick up and more jars on Friday if that is ok.

Thanks

Ted

From: Sophia Narkiewicz [mailto:Sophia.Narkiewicz@gza.com]
Sent: Wednesday, May 28, 2014 4:58 PM
To: Ted Healey
Subject: RE: 642 Allens Ave Samples

Hi Ted,

| WHG Lab ID | Client/Field ID | Matrix | Date Collected | Date Received | Label | Ltd |
|------------|-----------------|--------|----------------|---------------|-------------------------|--------------------|
| 1405016-03 | GZ-305S S-5 | Soil | 05/22/2014 | 05/23/2014 | matches COC | GZ-305S S-5 8'-10' |
| 1405016-04 | GZ-306S S-4 | Soil | 05/22/2014 | 05/23/2014 | matches COC | GZ-306S S-4 6'-8' |
| 1405016-05 | GZ-306S S-5 | Soil | 05/22/2014 | 05/23/2014 | matches COC | GZ-306S S-5 8'-10' |
| 1405016-14 | GZ-308S S-4 | Soil | 05/19/2014 | 05/23/2014 | GZ-308 S-4 | GZ-308S |
| 1405016-17 | GZ-308S S-10 | Soil | 05/19/2014 | 05/23/2014 | GZ-308S S-10 18'-20' | |
| 1405016-19 | GZ-309D S-4 | Soil | 05/20/2014 | 05/23/2014 | GZ-309 S-4 6'-8' | matches COC |

1405016-20 GZ-309D S-5 Soil 05/20/2014 05/23/2014 GZ-309 S-5 8'-10' GZ-309D S-5 8'-10'

Thank you. Please use the Client/Field ID column with red text.

We'd like to arrange another pick up for Friday. Can you also drop off at the same time another case of 24 8 oz jars?

Thanks!

Sophia

From: Ted Healey [mailto:ehaleay@newfields.com]
Sent: Tuesday, May 27, 2014 5:59 PM
To: Margaret Kilpatrick
Cc: Sophia Narkiewicz
Subject: 642 Allens Ave Samples

Hi Sophia and Meg,

The GZA 642 Allens Ave COC's received on Friday are attached.

Also attached is a table identifying the discrepancies between the COC and the sample labels, and where sometimes noted, the lids on the jars as well.

Could you confirm what is correct?

Thanks

Keep me posted this week if you need another pickup.

Ted

Ted Healey

Staff Scientist

NewFields Environmental Forensics Practice, LLC

300 Ledgewood Place, Suite 305

Rockland, MA 02370

781-681-5040 X 109

781-681-5048 (FAX)

ehealey@newfields.com



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For information about GZA GeoEnvironmental, Inc. and its services, please visit our website at www.gza.com.



Chain of Custody

1406002

Environmental Forensics Practice LLC

| Proj. No 32554 | | Proj. Name 642 ALLENS AVENUE MGP | | | | | | | | | | | | | |
|--|--------------|-------------------------------------|-------|-----------------------|--------------|--|----------------------------|----------------------------------|----------------|-----------------|---------------|--------------|--------|-----|------------|
| SAMPLERS: Signature <i>[Signature]</i> | | | | | | ANALYSIS REQUESTED → "NUMBER OF CONTAINERS" | MATRIX (Oil/Soil/Water) | GC-FID-TPH (C ₁₇) | GCMS-Alkyl PAH | GCMS-Biomarkers | PIANO-VOA | Organic Lead | METALS | PCB | Pesticides |
| LAB ID | CLIENT ID | DATE | TIME | TOTAL # OF CONTAINERS | PRESERVED | SAMPLE DESCRIPTION | | | | | | | | | |
| 1406002-01 | 62-3120 S-4 | 5/23/14 | 17:00 | 1 | NONE | | G | X | | | | | | | |
| 02 | 62-3130 S-10 | 5/27/14 | 12:30 | ↓ | ↓ | | ↓ | ↓ | | | | | | | |
| 03 | 62-3040 S-5 | 5/28/14 | 10:00 | | | | | | | | | | | | |
| 04 | 62-3040 S-7 | 5/28/14 | 10:15 | | | | | | | | | | | | |
| 05 | 62-3030 S-8 | 5/28/14 | 11:00 | | | | | | | | | | | | |
| 06 | 62-3020 S-10 | 5/29/14 | 13:30 | ↓ | ↓ | | | | | | | | | | |
| Relinquished by: <i>[Signature]</i> | | | | Date 5/29/14 | Time 1615 | Received by: <i>[Signature]</i> AAC | | | | Date 5/30/14 | Time 1256 | | | | |
| Relinquished by: <i>[Signature]</i> | | | | Date 5/30/14 | Time 1155 | Received by: <i>[Signature]</i> | | | | Date 5/30/14 | Time 11:55 | | | | |
| Relinquished by: | | | | Date | Time | Received by: | | | | Date | Time | | | | |
| Comments: Samples to be shipped to: Alpha Analytical-Woods Hole Lab 320 Forbes Blvd. Mansfield, MA 02048 Tel: (508) 822-9300 Attn: Liz Porta | | | | | | | | | | | | | | | |

191-9-991



Hold Fridge

Sample Delivery Group Form

Laboratory Job No: 1406002
Receipt Date/Time: 5/30/14 14:28

Client: Newfre
SDG Reviewer: KL

Samples Delivered By:
 Alpha Courier Client UPS FedEx Other _____
 Bill of Laden: Yes Unavailable Tracking #: NA

Chain of Custody: Present Absent: _____
Custody Seals: Absent Present/Intact Present/Broken

Cooler/Sample Temperature:
 Is Ice/Blue Ice present? Yes No N/A _____
 Temp taken from: Temp Blank: (a) _____ (b) _____ (c) _____ (d) _____ (e) _____
 IR Gun: (a) 2A^u (b) _____ (c) _____ (d) _____ (e) _____
 IR Gun SN (circle one): 090512810 100311463
 Was Temp: 2-6 Celsius
 <2 Celsius ... were samples frozen upon receipt? Yes No
 >6 Celsius ... were samples delivered direct from site? Yes No

Containers Received: Intact
 Broken/Leaking Sample IDs: _____
 Sample IDs: _____

All Containers Accounted For? Yes
 No: _____
Extra Samples Received? No
 Yes: _____
Do Sample Labels and COC agree? Yes
 No: _____
Are Samples in Appropriate Containers? Yes
 No: _____
Are samples rec'd within holding time? Yes
 No: _____
 * Please note: the analysis of pH will always be performed beyond the regulatory-required holding time of 15 min. from the time of collection.

pH of samples upon receipt: N/A <2 >12 and/or _____
 Are samples properly preserved? Yes No If No then.....
 Initial pH= _____ preserved In-House with HCL H₂SO₄ HNO₃ NaOH <<Final pH = _____>>
 Other Issues: _____
 Chlorine Check: N/A Present Absent

VOA/VPH vials: Yes No Preserved? Yes No If yes: HCL, _____
 Aqueous: vials contain head space? No Yes: _____
 Soils: MeOH covering soil? Yes No: _____
 Reagent H₂O Preserved vials Frozen @ date/time: _____
 Frozen by Client? No Yes @ date/time: _____

Was Client notified of any discrepancies listed above? Yes No N/A

If Yes: Call Tracker # _____
Form No.: 101-12

Alpha Analytical
Mansfield, MA

06/15/2011



Chain of Custody

HOLD ALL SAMPLES

Environmental Forensics Practice LLC

1406006

| | | | | | | | | | | | | | | | | | | | | | | |
|--|---------------|-------------------------------|-------|--------------------|--------|-----------------------|-----------|--|--|--|---|------|----------------------------|---------------------|----------------|-----------------|-----------|--------------|--------|-----|------------|--|
| Proj. No 33554 | | Proj. Name 642 ALLENS AVE MBP | | | | | | | | | | | | | | | | | | | | |
| SAMPLERS: Signature <i>Sophia Nakov</i> | | | | | | TOTAL # OF CONTAINERS | PRESERVED | ANALYSIS REQUESTED → "NUMBER OF CONTAINERS" | | | | | MATRIX (Oil/Soil/Water) | GC-FID-TPH (C&T) | GCMS-Alkyl PAH | GCMS-Biomarkers | PIANO-YOA | Organic Lead | METALS | PCB | Pesticides | |
| LAB ID | CLIENT ID | DATE | TIME | SAMPLE DESCRIPTION | | | | | | | | | | | | | | | | | | |
| 1406006 | | | | | | | | | | | | | | | | | | | | | | |
| -01 | G2-307SR S-3 | 6/3/14 | 11:40 | 1 | NONE | | | | | | S | X | | | | | | | | | | |
| 02 | G2-307SR S-4 | 6/3/14 | 11:50 | | | | | | | | | | | | | | | | | | | |
| 03 | G2-307SR S-5 | 6/3/14 | 12:05 | | | | | | | | | | | | | | | | | | | |
| 04 | G2-307SR S-6 | 6/3/14 | 12:20 | | | 1406010-01 | | | | | | | | | | | | | | | | |
| 05 | G2-307SR S-7 | 6/3/14 | 12:30 | | | | | | | | | | | | | | | | | | | |
| 06 | G2-307SR S-9A | 6/3/14 | 13:00 | ↓ | ↓ | | | | | | | | | | | | | | | | | |
| 07 | G2-300SA S-4 | 6/4/14 | 9:55 | | | 1406010-02 | | | | | | | | | | | | | | | | |
| 08 | G2-300SA S-7 | 6/4/14 | 9:20 | | | | | | | | | | | | | | | | | | | |
| 09 | G2-310 S-5A | 6/4/14 | 13:30 | | | 1406010-03 | | | | | | | | | | | | | | | | |
| 10 | G2-310 S-5B | 6/4/14 | 13:30 | ↓ | ↓ | | | | | | | | | | | | | | | | | |
| Relinquished by: <i>Sophia Nakov</i> | | | | Date | 6/5/14 | Time | 1700 | Received by: <i>MSM AAL</i> | | | | Date | 6/6/14 | Time | 1045 | | | | | | | |
| Relinquished by: <i>MSM</i> | | | | Date | 6/6/14 | Time | 1347 | Received by: <i>Alexander N...</i> | | | | Date | 6.6.14 | Time | 13:47 | | | | | | | |
| Relinquished by: | | | | Date | | Time | | Received by: | | | | Date | | Time | | | | | | | | |
| Comments: Samples to be shipped to: Alpha Analytical-Woods Hole Lab 320 Forbes Blvd. Mansfield, MA 02048 Tel: (508) 822-9300 Attn: Liz Porta | | | | | | | | | | | | | | | | | | | | | | |



Sample Delivery Group Form

Laboratory Job No: 1406006 / 1406010
Receipt Date/Time: 6-16-14 10:45

Client: NEWFIELDS
SDG Reviewer: [Signature]

Samples Delivered By:

[X] Alpha Courier [] Client [] UPS [] FedEx [] Other
Bill of Laden: [] Yes [] Unavailable Tracking #: NA

Chain of Custody: [X] Present [] Absent

Custody Seals: [X] Absent [] Present/Intact [] Present/Broken

Cooler/Sample Temperature:

Is Ice/Blue Ice present? [X] Yes [] No [] N/A

Temp taken from: Temp Blank: (a) (b) (c) (d) (e)

IR Gun: (a) 5.6°C (b) (c) (d) (e)

IR Gun SN (circle one): 090512810 100311463

Was Temp: [X] 2-6 Celsius

[] <2 Celsius ... were samples frozen upon receipt? [] Yes [] No

[] >6 Celsius ... were samples delivered direct from site? [] Yes [] No

Containers Received:

[] Broken/Leaking

[X] Intact

Sample IDs:

Sample IDs:

All Containers Accounted For? [X] Yes

[] No:

Extra Samples Received? [X] No

[] Yes:

Do Sample Labels and COC agree? [X] Yes

[] No:

Are Samples in Appropriate Containers? [X] Yes

[] No:

Are samples rec'd within holding time? [X] Yes

[] No:

* Please note: the analysis of pH will always be performed beyond the regulatory-required holding time of 15 min. from the time of collection.

pH of samples upon receipt: [X] N/A [] <2 [] >12 and/or []

Are samples properly preserved? [] Yes [] No If No then.....

Initial pH= preserved In-House with [] HCL [] H2SO4 [] HNO3 [] NaOH <<Final pH = >>

Other Issues:

Chlorine Check: [] N/A [] Present [] Absent

VOA/PH vials: [] Yes [X] No Preserved? [] Yes [] No If yes: [] HCL, []

Aqueous: vials contain head space? [] No [] Yes:

Soils: MeOH covering soil? [] Yes [] No:

Reagent H2O Preserved vials Frozen @ date/time:

Frozen by Client? [] No [] Yes @ date/time:

Was Client notified of any discrepancies listed above? [] Yes [] No [X] N/A

If Yes: Call Tracker #

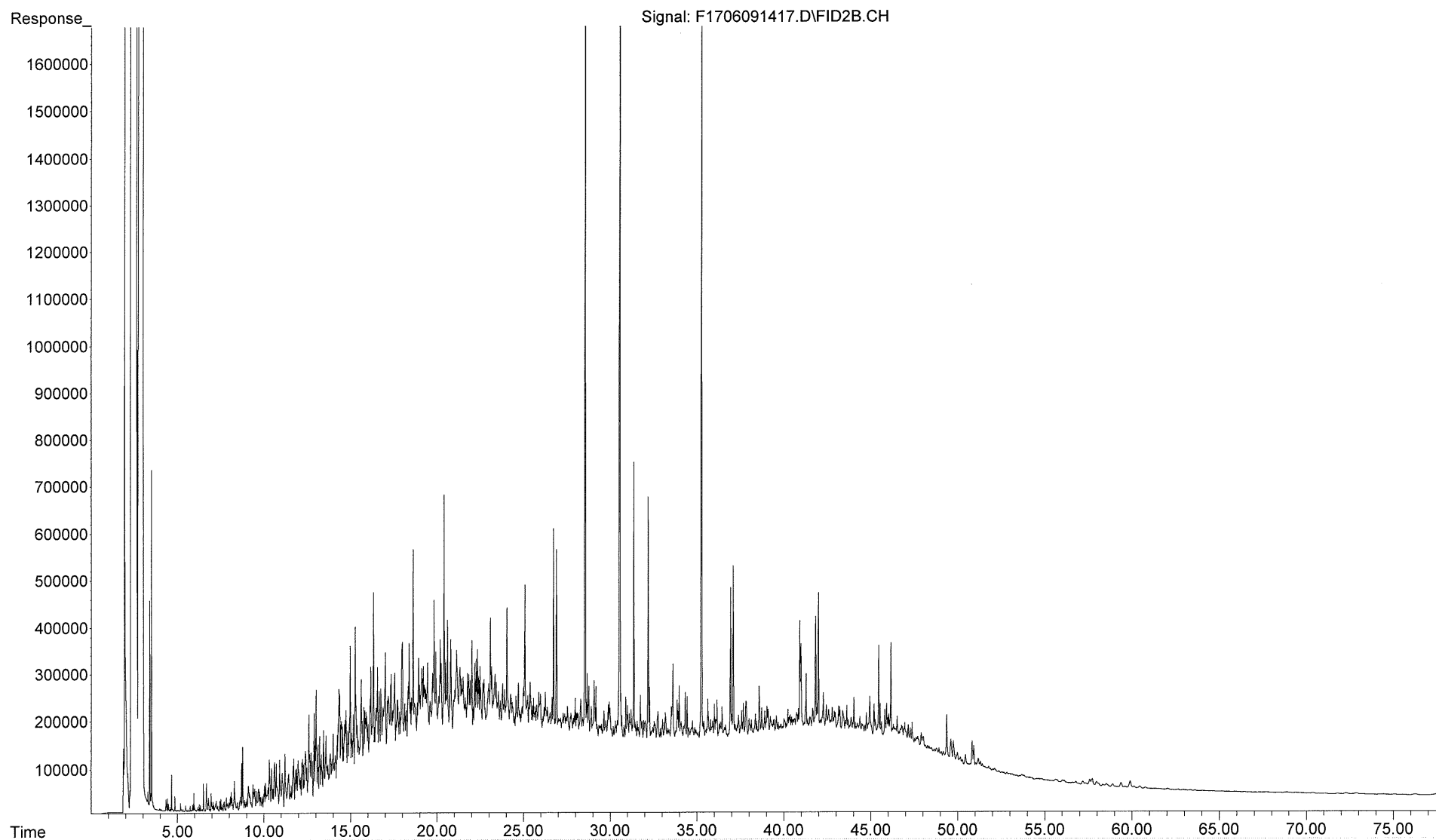
Form No.: 101-12

Alpha Analytical
Mansfield, MA

06/15/2011

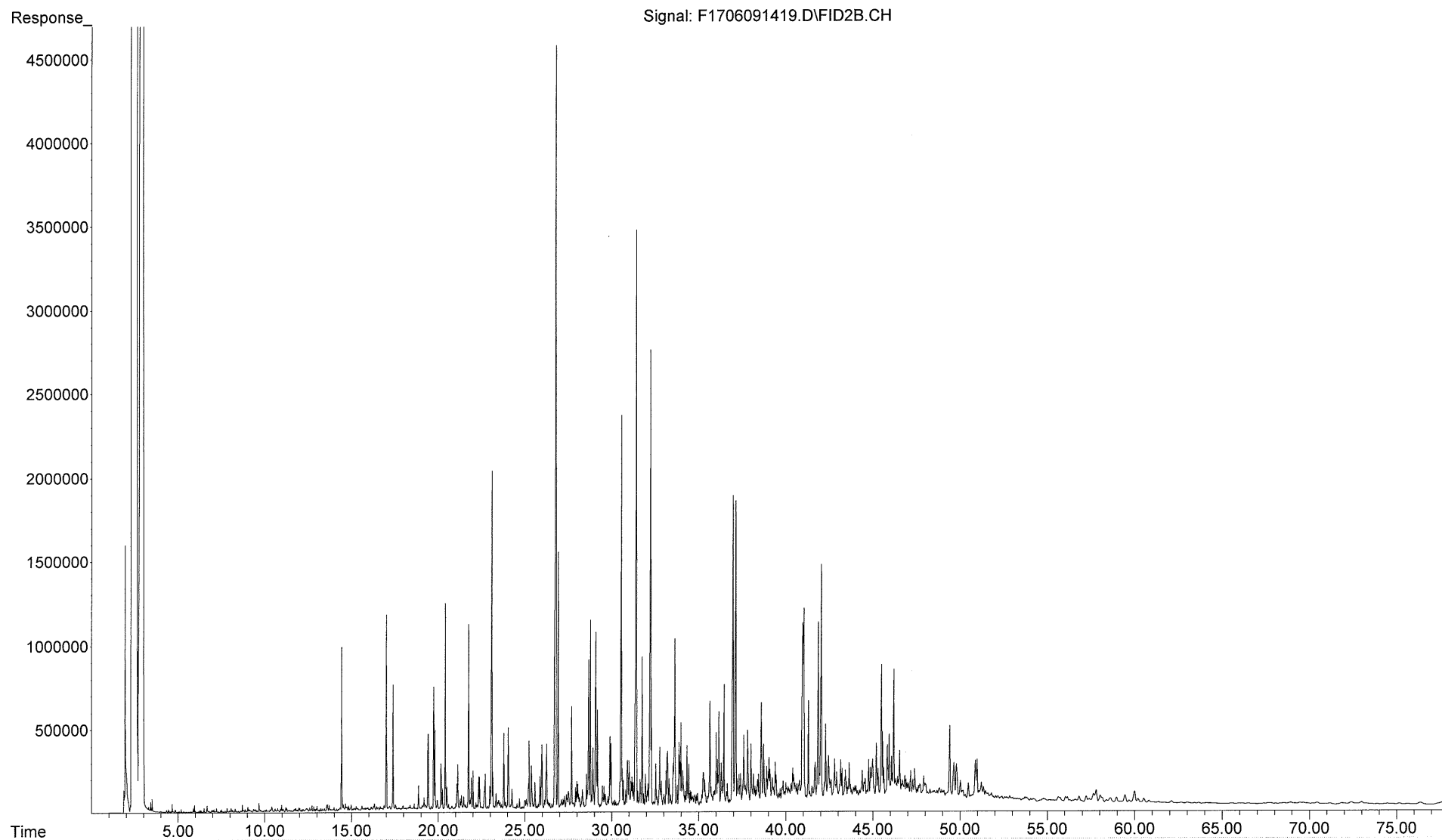
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1405021\Preliminary FID
... \F1706091417.D
Operator : FID17:NL
Instrument : FID17
Acquired : 09 Jun 2014 9:15 pm using AcqMethod FID17.M
Sample Name: 1405021-01
Misc Info : 1X

GZ-305S S-5
1405021-01



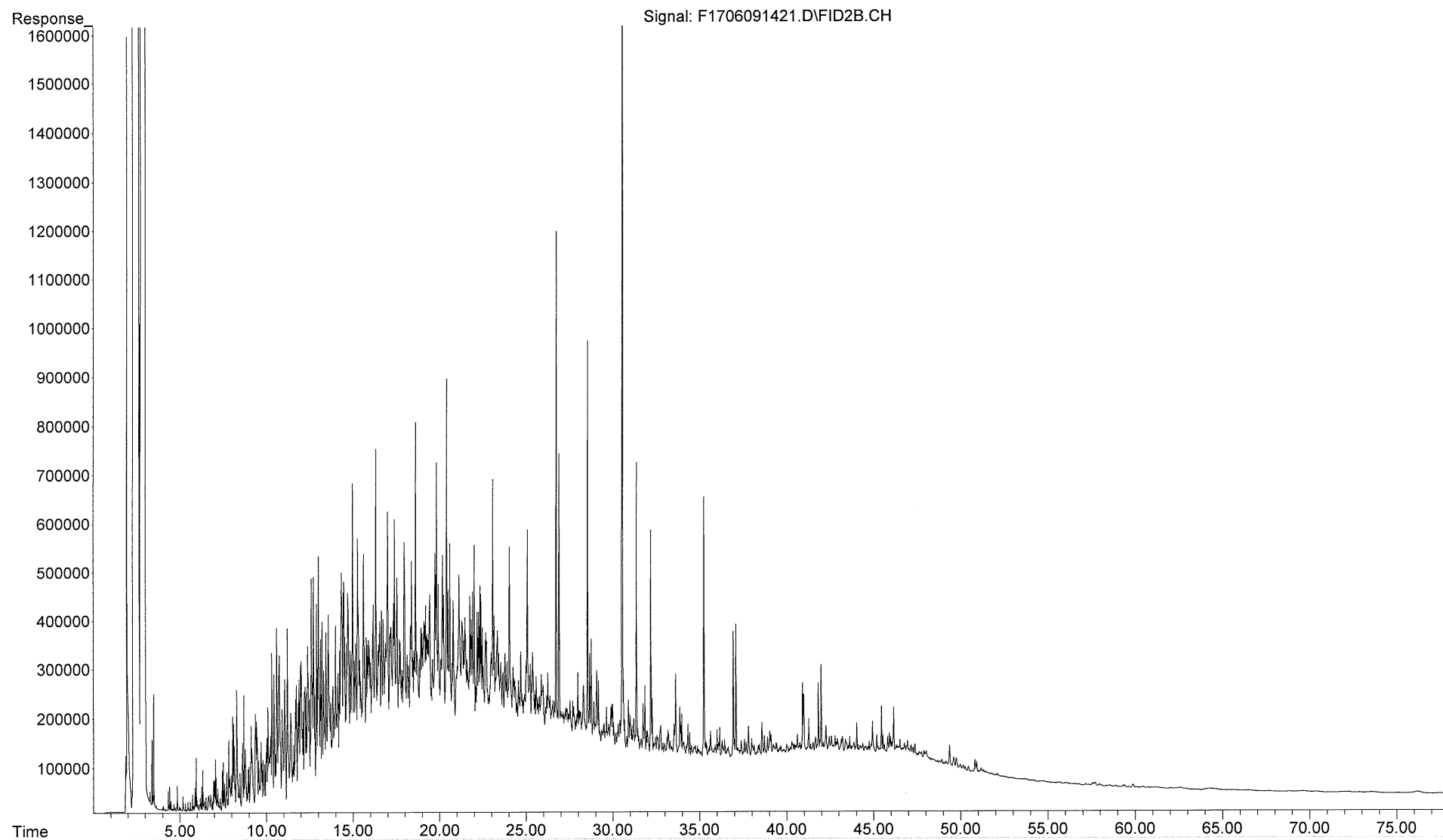
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... \F1706091419.D
Operator : FID17:NL
Instrument : FID17
Acquired : 09 Jun 2014 10:45 pm using AcqMethod FID17.M
Sample Name: 1405021-02
Misc Info : 1X

GZ-306S S-4
1405021-02



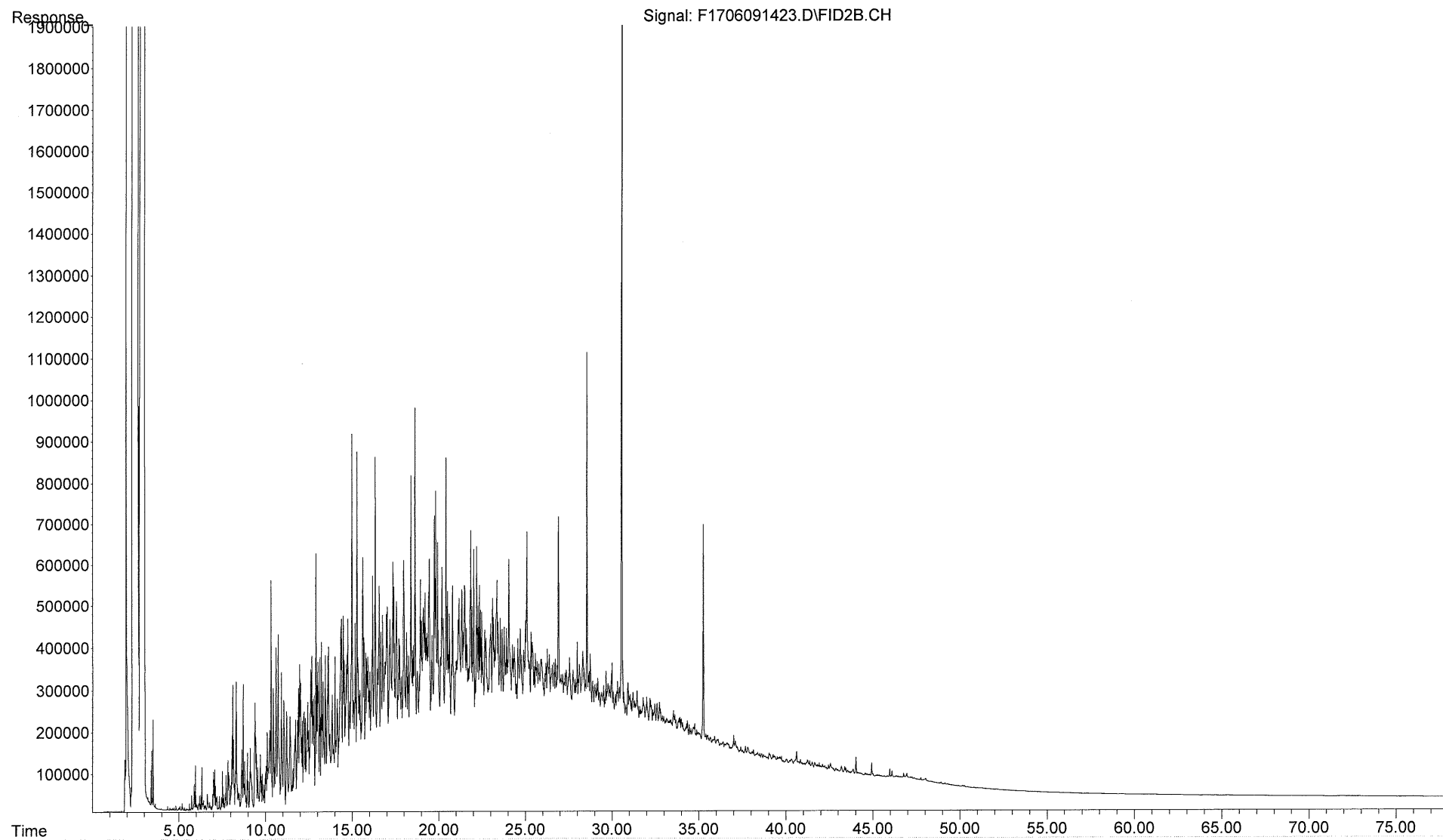
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... \F1706091421.D
Operator : FID17:NL
Instrument : FID17
Acquired : 10 Jun 2014 0:15 am using AcqMethod FID17.M
Sample Name: 1405021-03
Misc Info : 1X

GZ-306S S-5
1405021-03



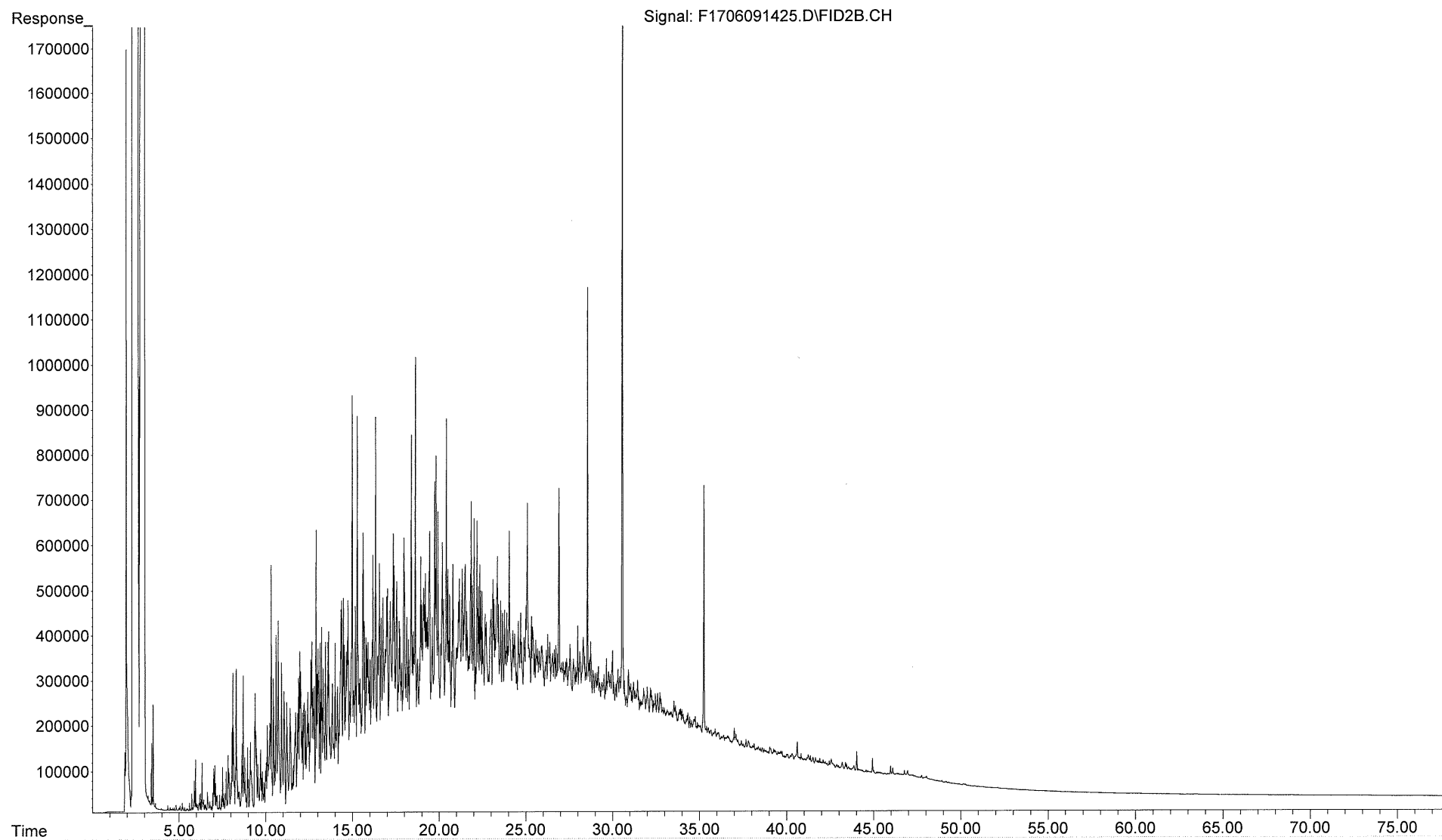
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Instrument : FID17
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Sample Name: 1405021-04
Misc Info : 1X

GZ-309D S-4
1405021-04



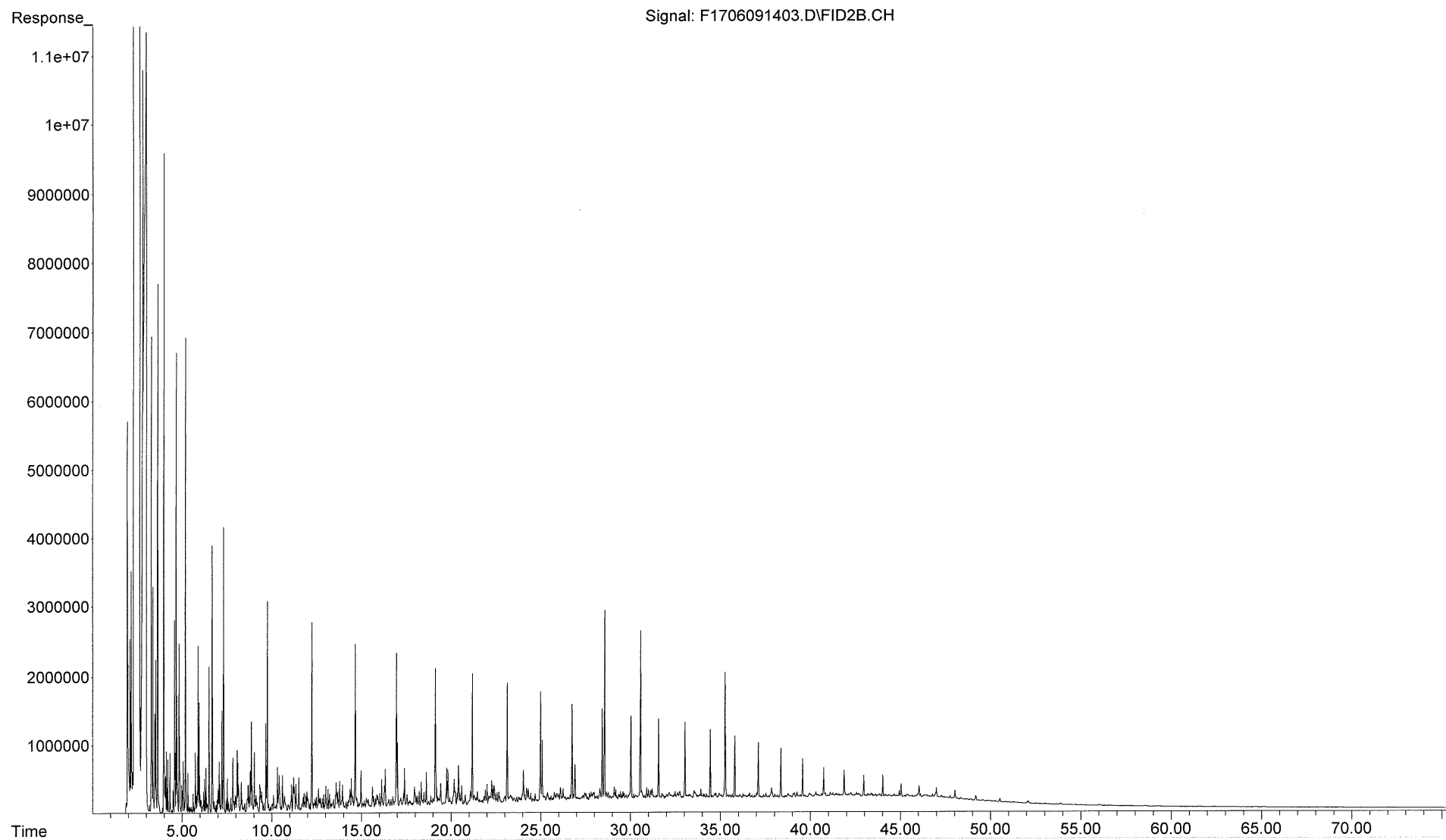
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... \F1706091425.D
Operator : FID17:NL
Instrument : FID17
Acquired : 10 Jun 2014 3:15 am using AcqMethod FID17.M
Sample Name: 1405021-04D
Misc Info : 1X

GZ-309D S-4
1405021-04D



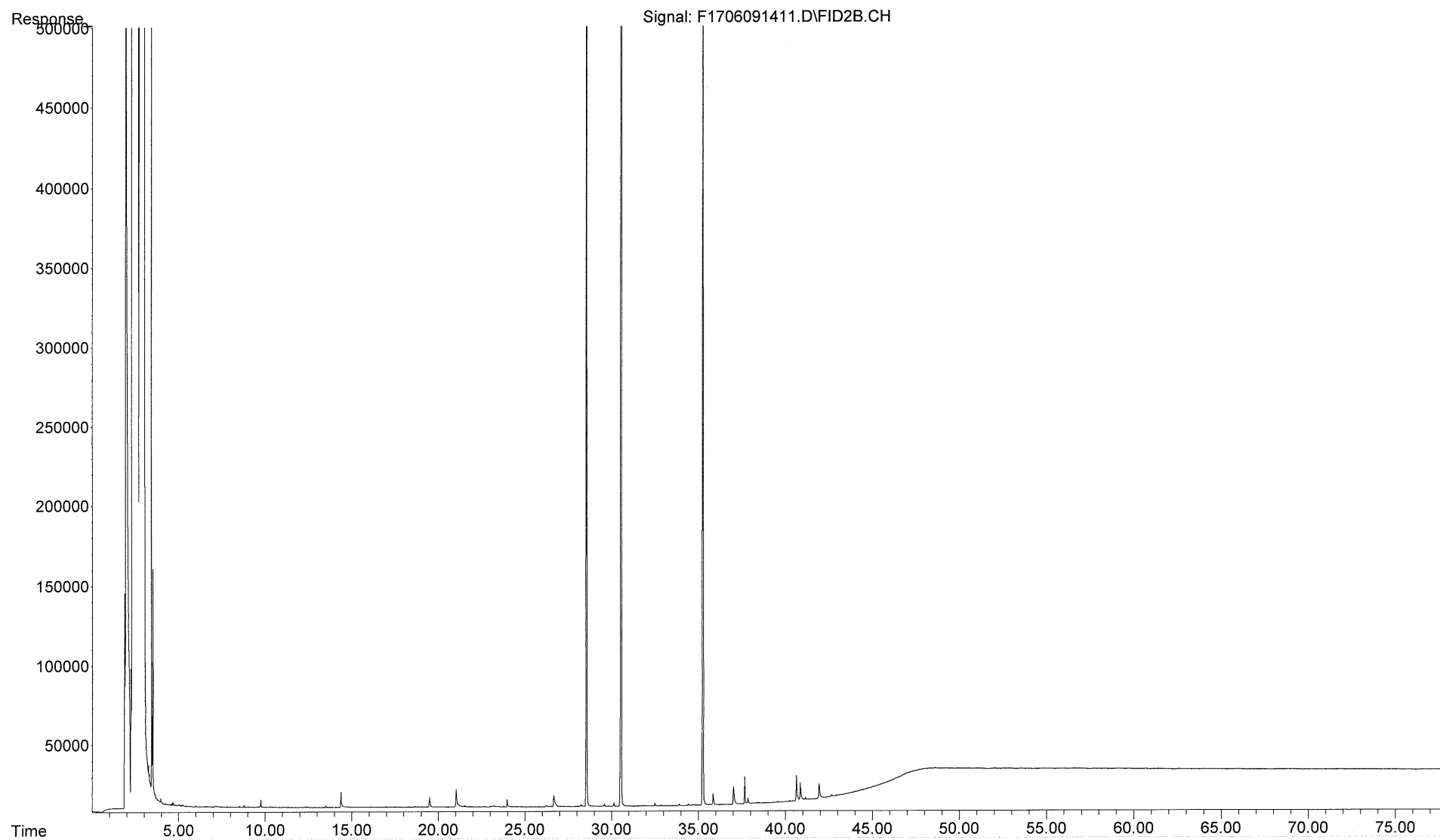
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... \F1706091403.D
Operator : FID17:NL
Instrument : FID17
Acquired : 09 Jun 2014 10:44 am using AcqMethod FID17.M
Sample Name: ANS
Misc Info : WHAT89

**North Slope Crude
Reference Standard**



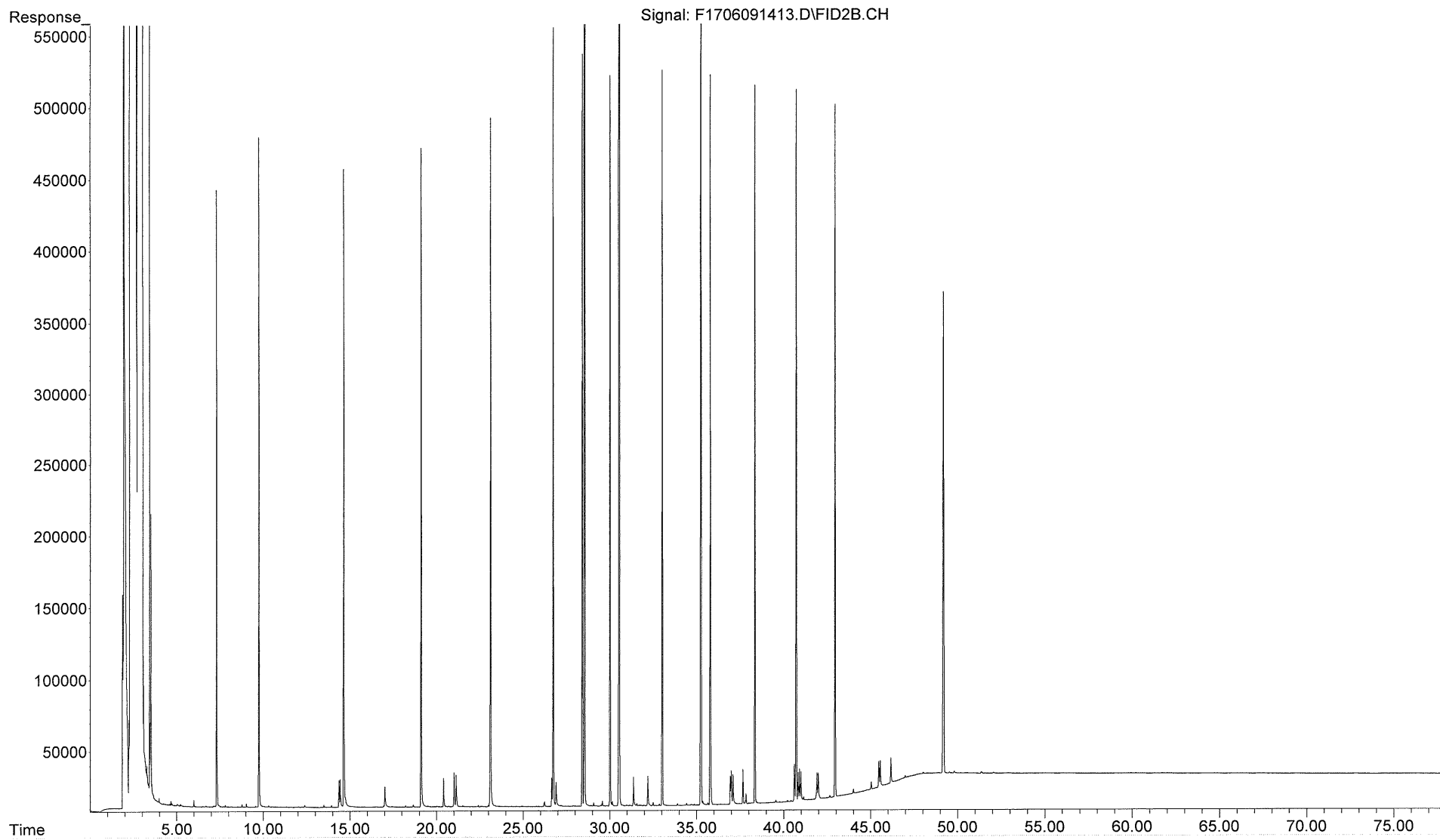
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... \F1706091411.D
Operator : FID17:NL
Instrument : FID17
Acquired : 09 Jun 2014 4:44 pm using AcqMethod FID17.M
Sample Name: TS060314B01
Misc Info : 1X

Method Blank
TS060314B01



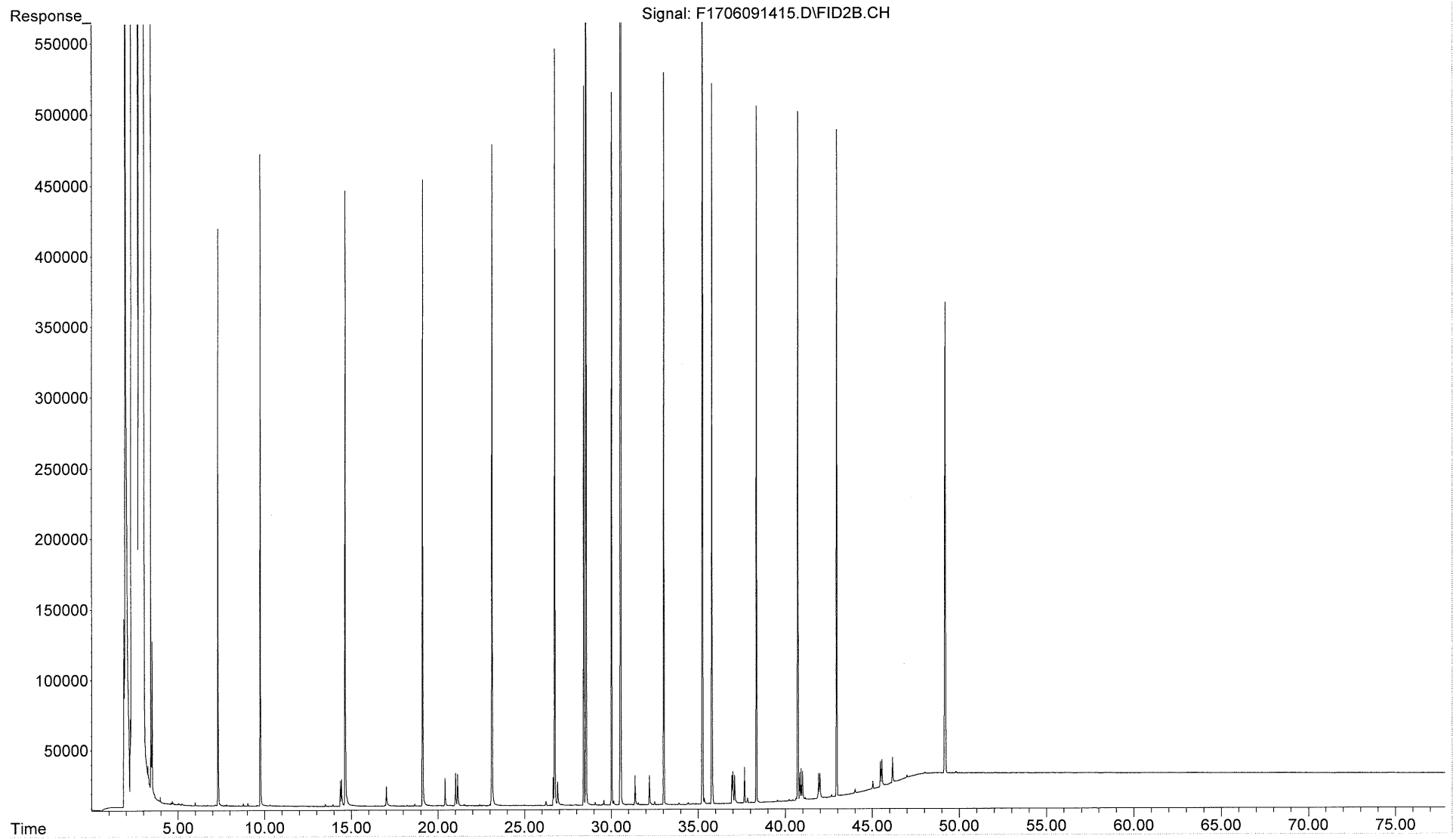
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... \F1706091413.D
Operator : FID17:NL
Instrument : FID17
Acquired : 09 Jun 2014 6:14 pm using AcqMethod FID17.M
Sample Name: TS060314LCS01
Misc Info : 1X

**Lab Control sample
TS060314LCS**



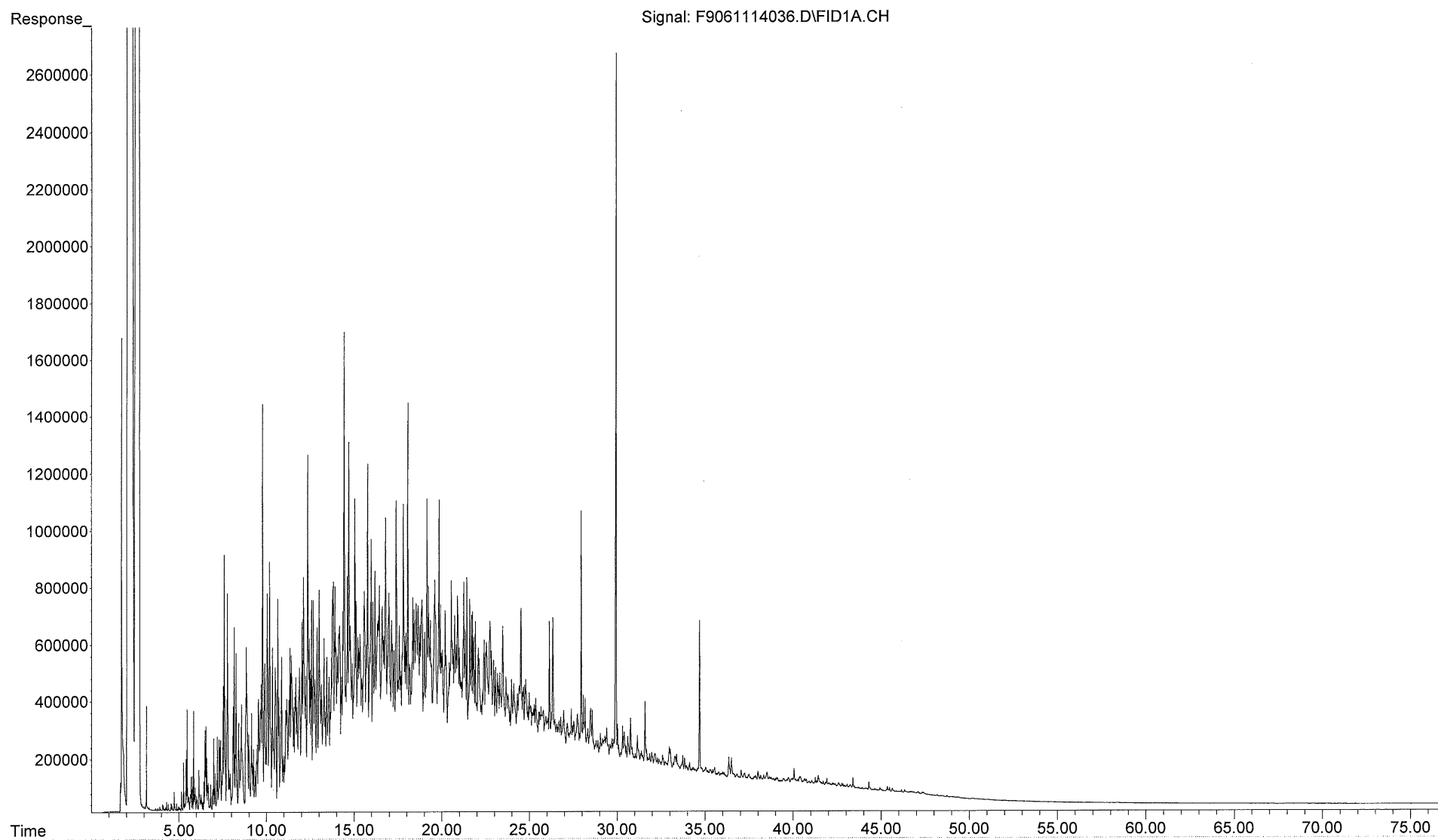
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... \F1706091415.D
Operator : FID17:NL
Instrument : FID17
Acquired : 09 Jun 2014 7:44 pm using AcqMethod FID17.M
Sample Name: TS060314LCSD01
Misc Info : 1X

**Lab Control sample Duplicate
TS060314LCSD**



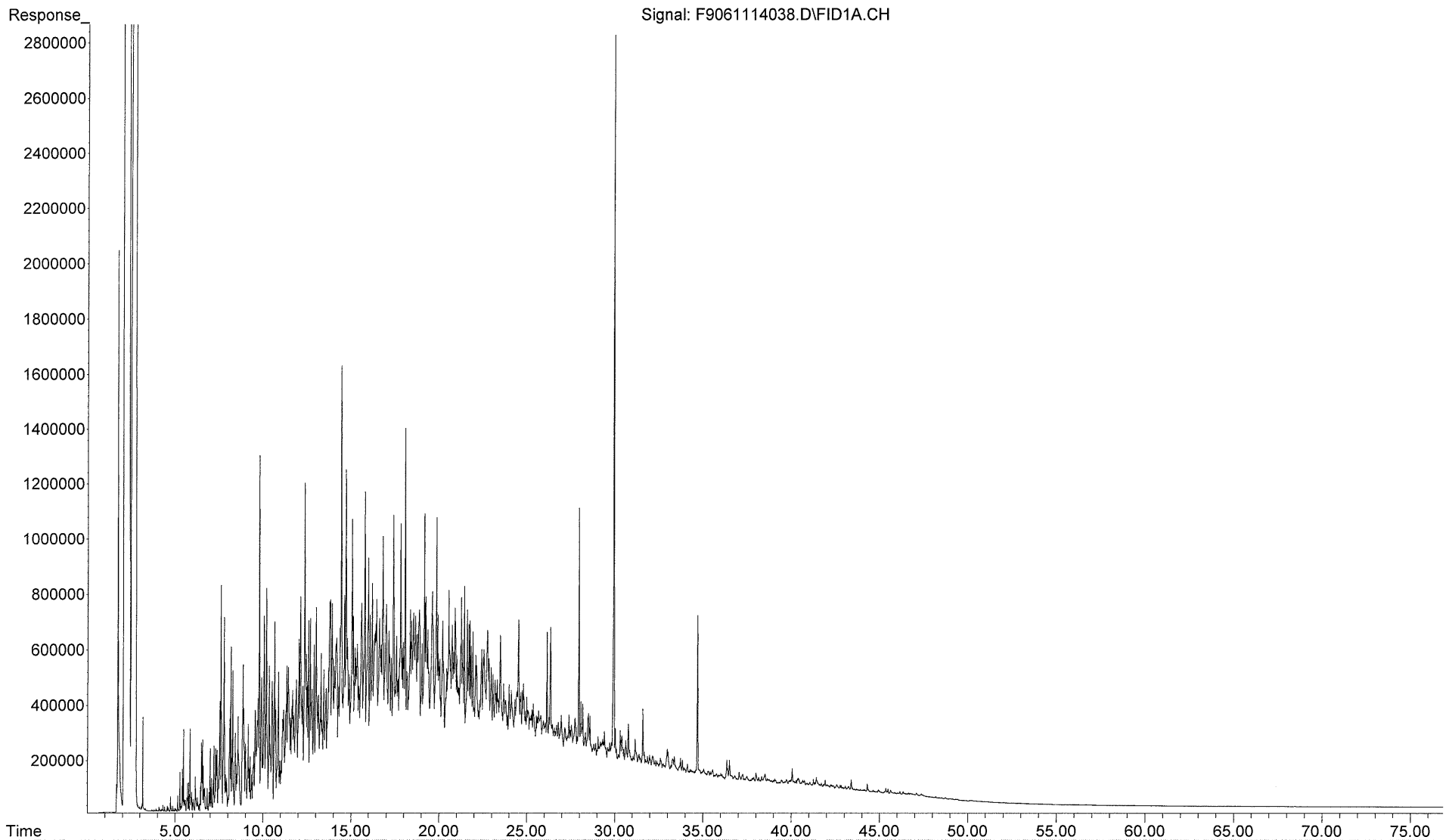
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114036.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 3:48 pm using AcqMethod FID9A.M
Sample Name: 1406002-01
Misc Info : 1X

GZ-312D S-4
1406002-01



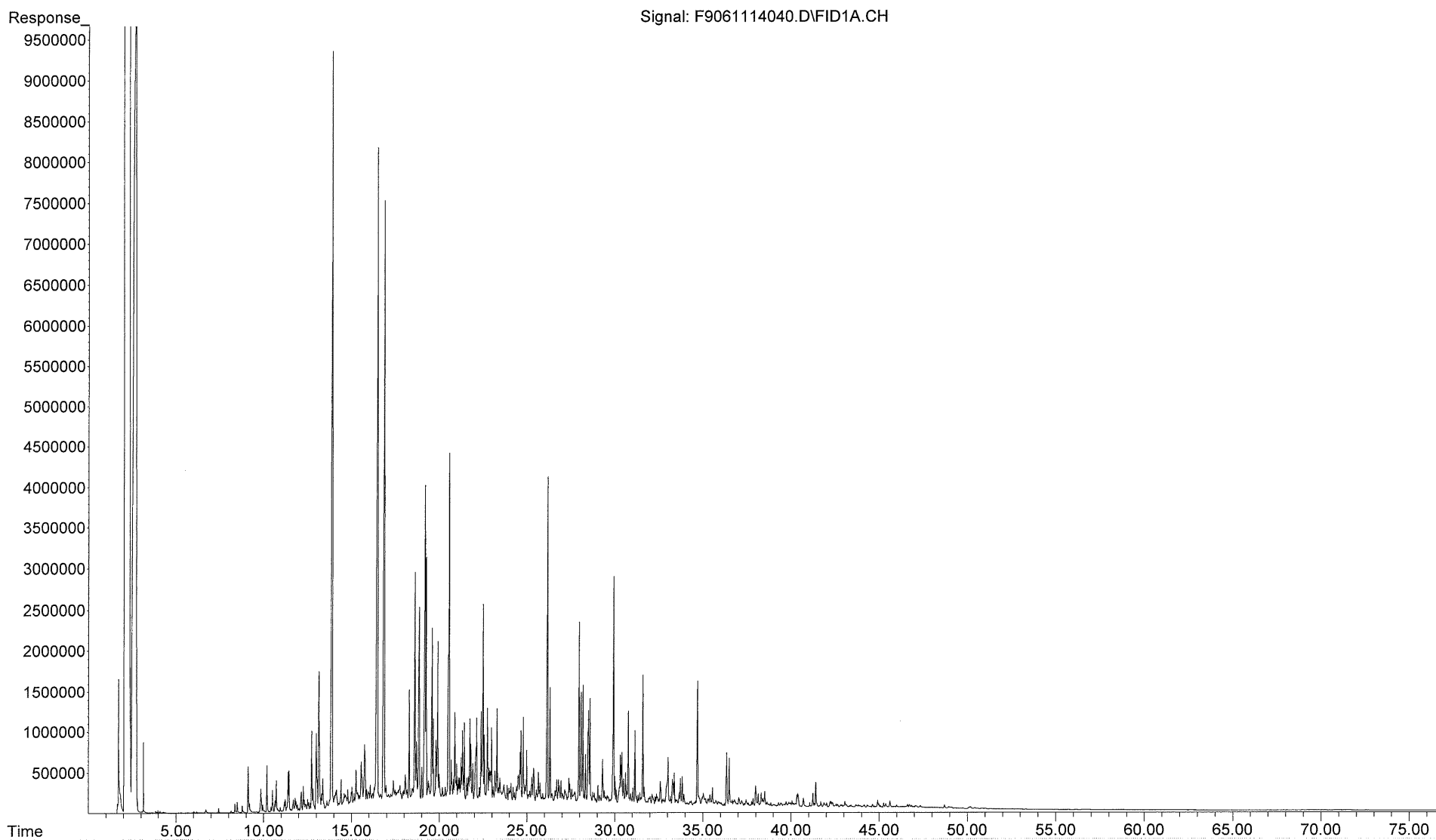
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114038.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 5:32 pm using AcqMethod FID9A.M
Sample Name: 1406002-01D
Misc Info : 1X

GZ-312D S-4
1406002-01D



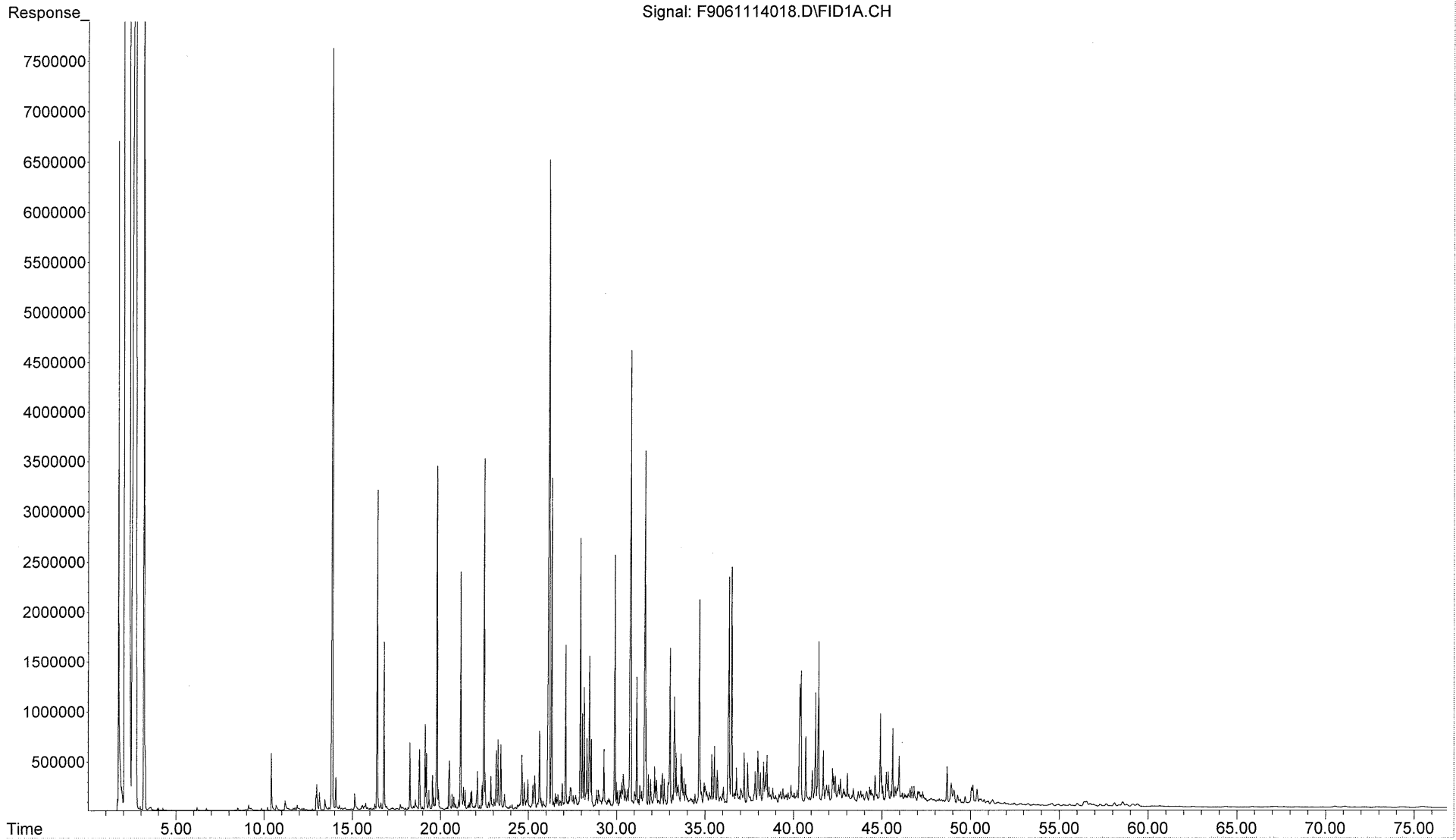
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114040.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 7:00 pm using AcqMethod FID9A.M
Sample Name: 1406002-02
Misc Info : 1X

GZ-313D S-10
1406002-02



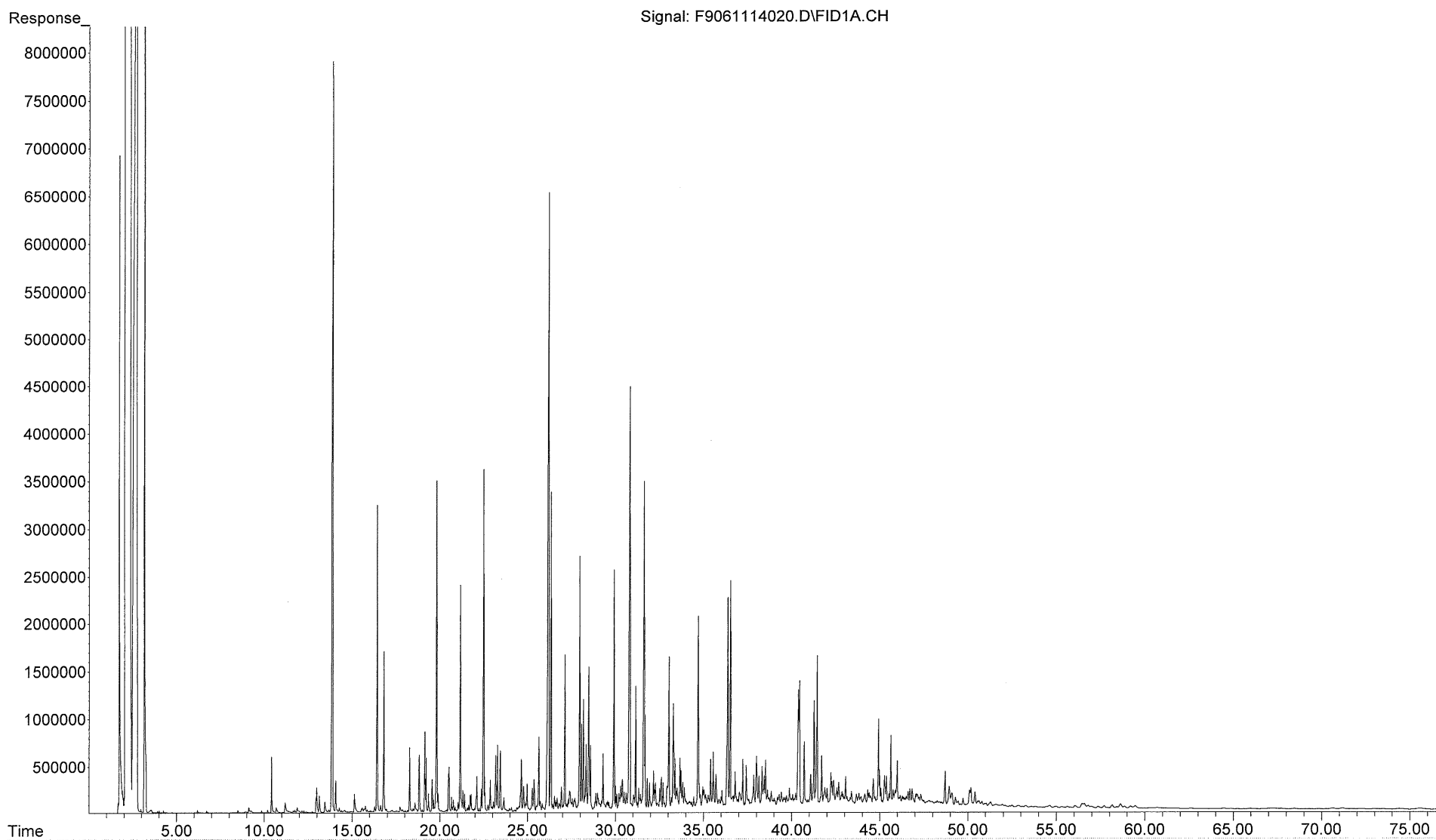
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114018.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 0:47 am using AcqMethod FID9A.M
Sample Name: 1406002-03
Misc Info : 1X

GZ-304D S-5
1406002-03



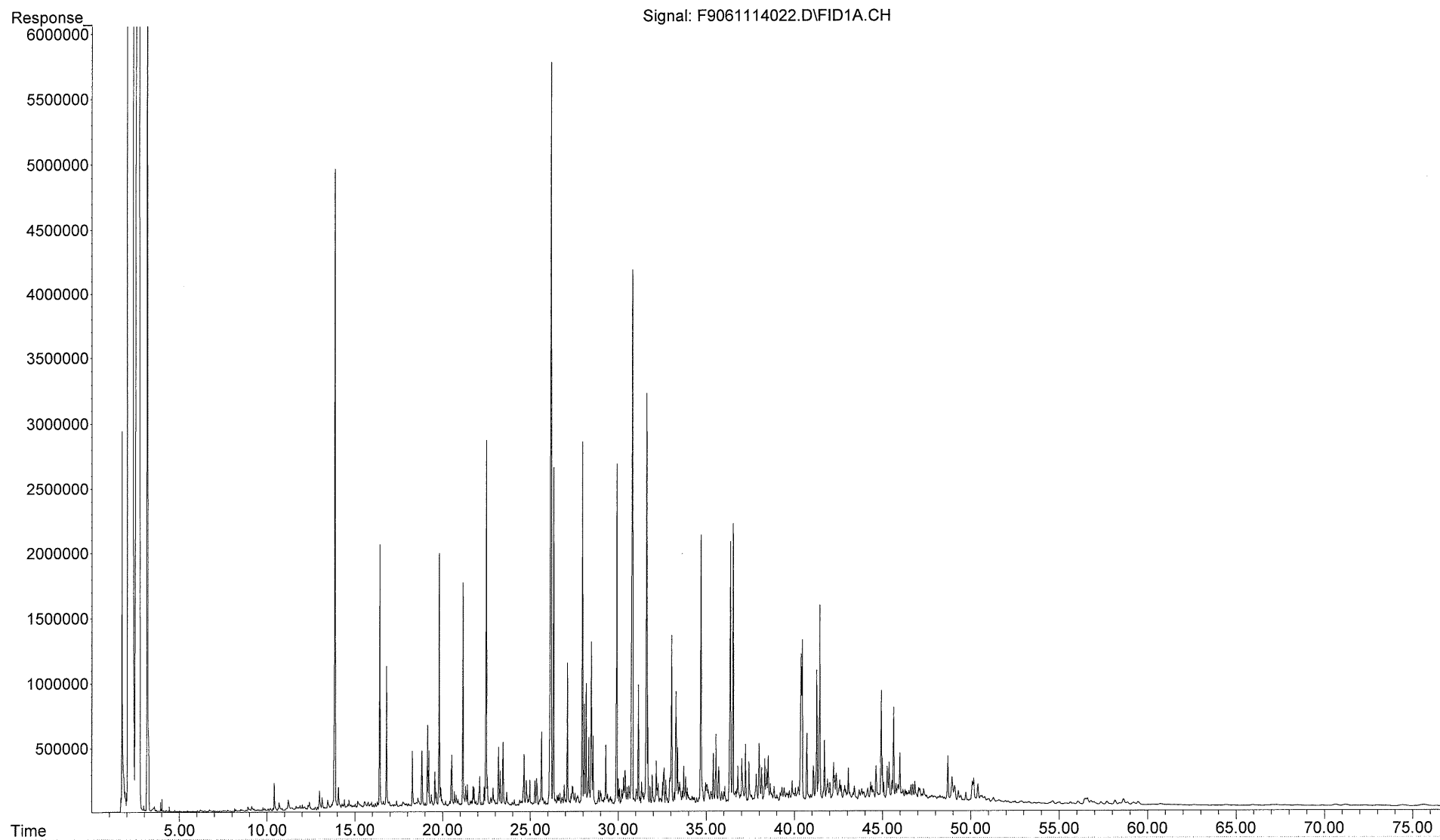
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114020.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 2:15 am using AcqMethod FID9A.M
Sample Name: 1406002-03D
Misc Info : 1X

GZ-304D S-5
1406002-03D



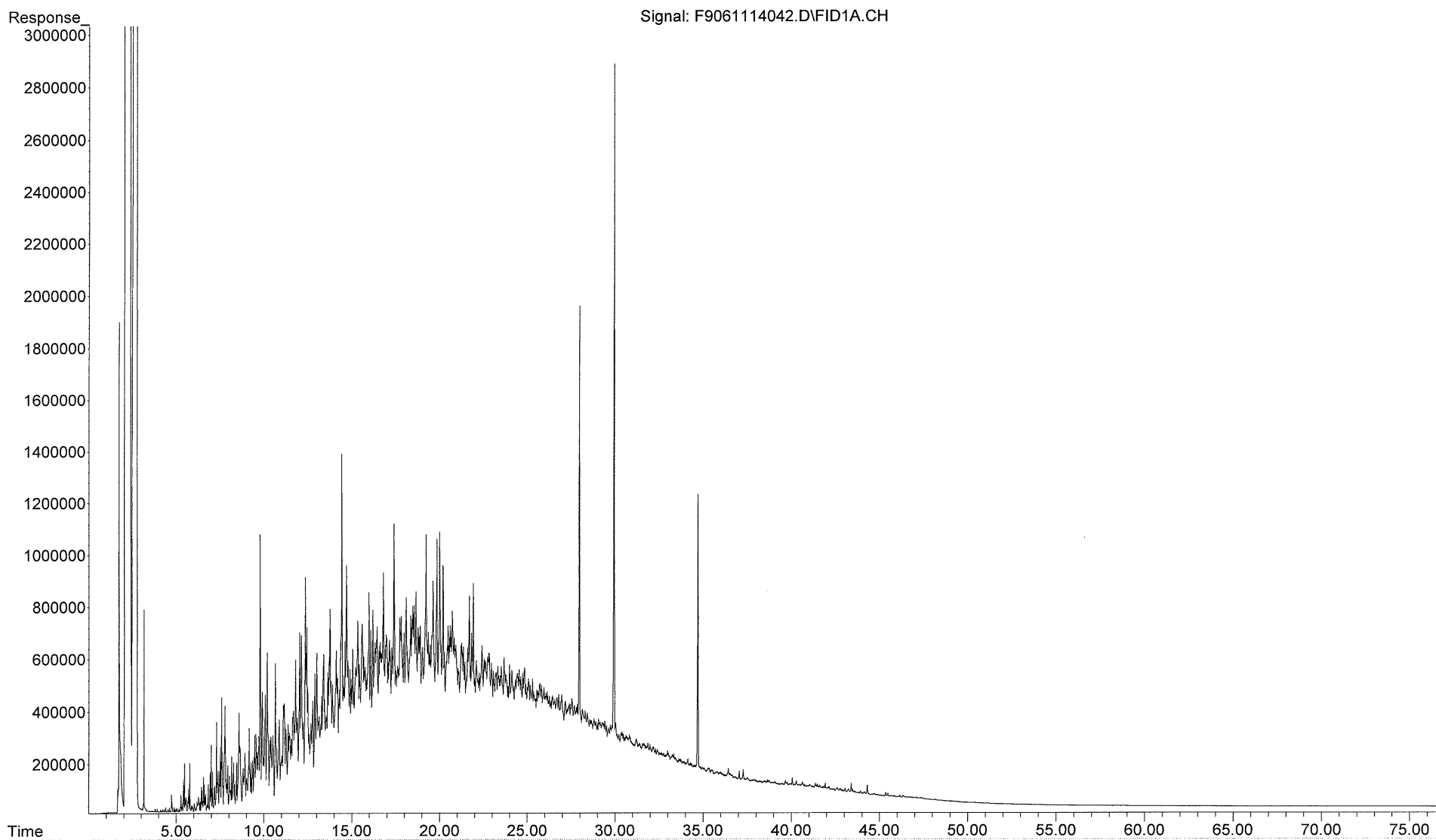
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114022.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 3:42 am using AcqMethod FID9A.M
Sample Name: 1406002-04
Misc Info : 1X

GZ-304D S-7
1406002-04



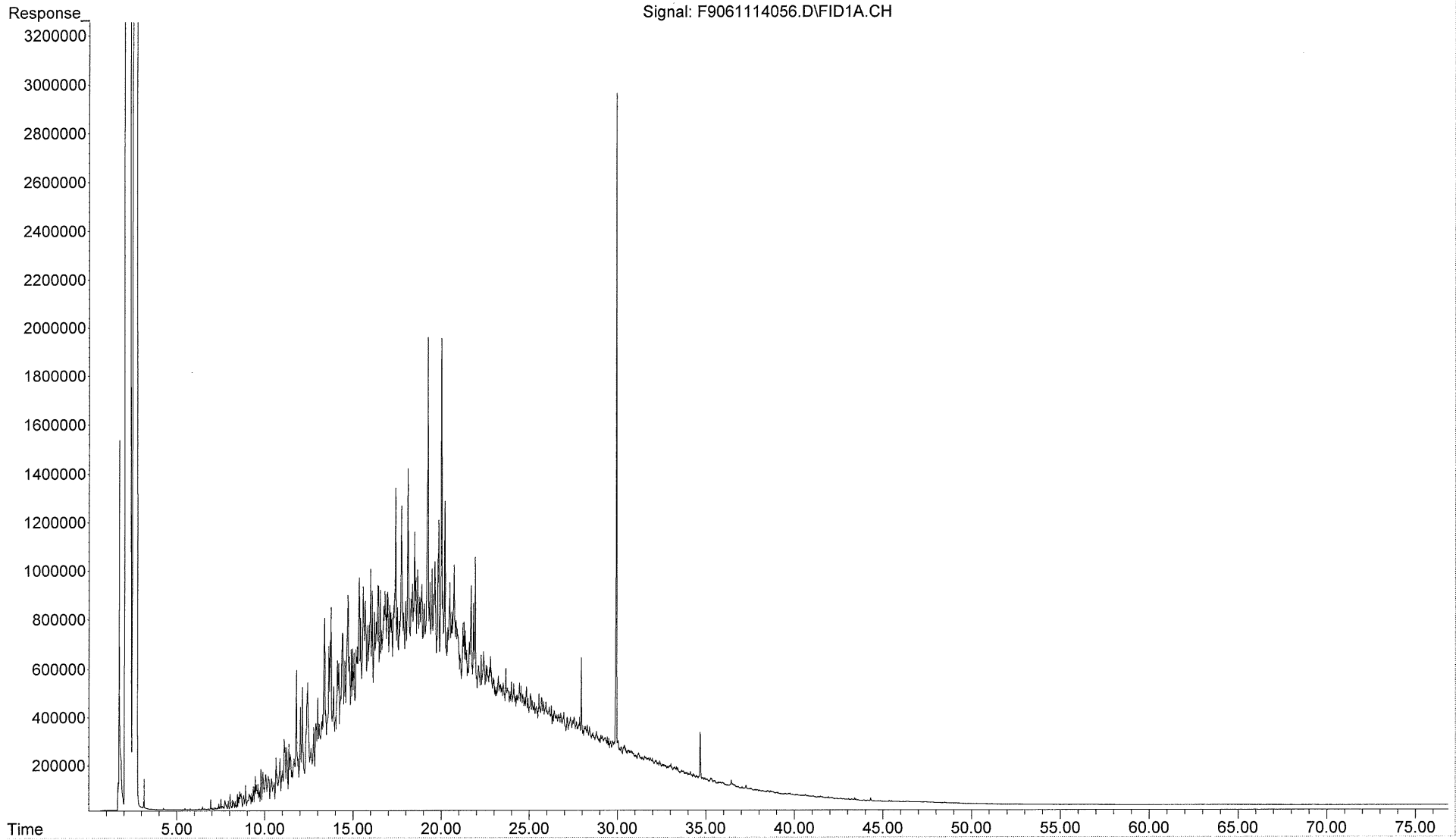
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114042.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 8:28 pm using AcqMethod FID9A.M
Sample Name: 1406002-05
Misc Info : 1X

GZ-303D S-8
1406002-05



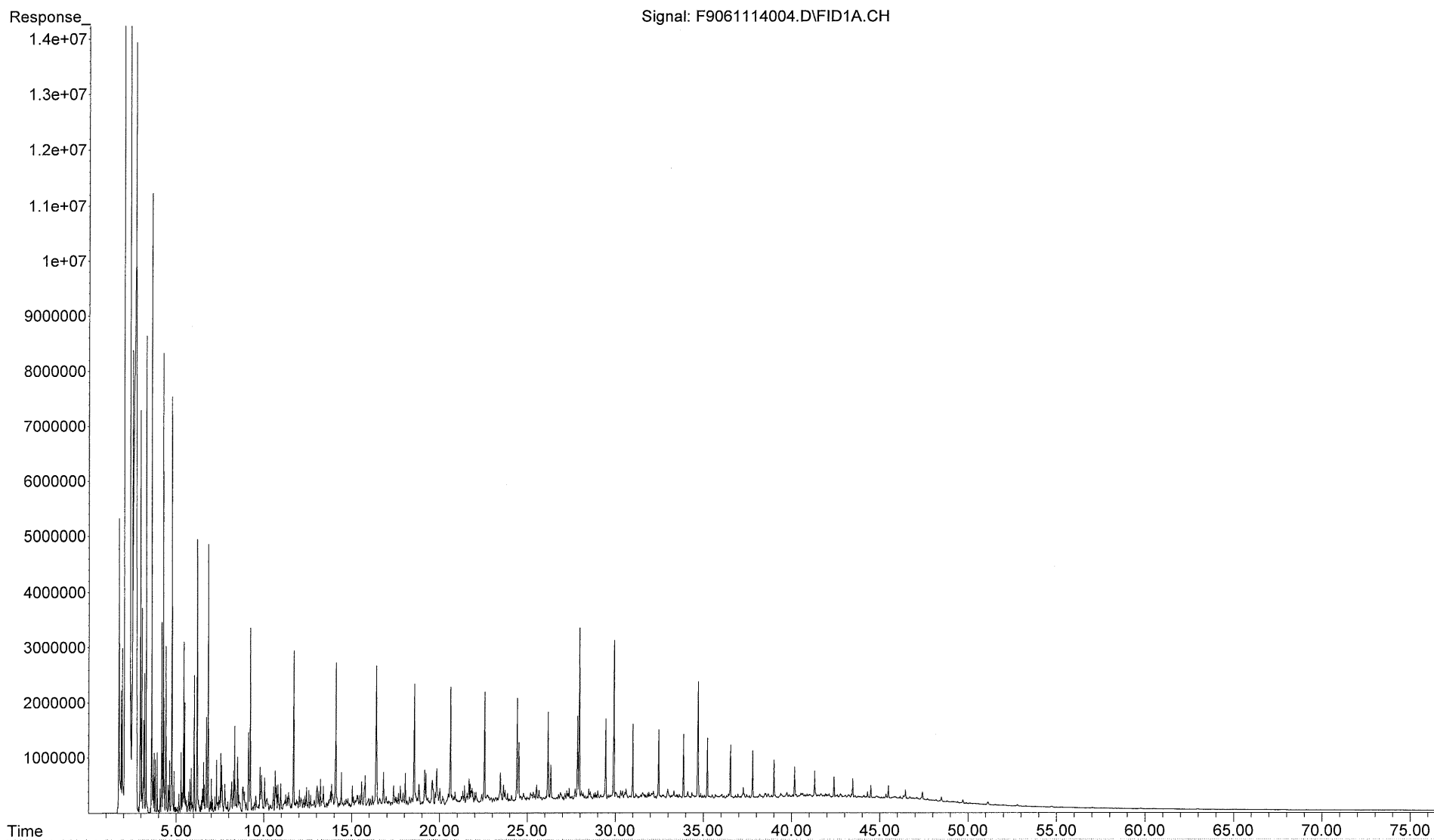
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114056.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 13 Jun 2014 6:41 am using AcqMethod FID9A.M
Sample Name: 1406002-06
Misc Info : 1X

GZ-302D S-10
1406002-06



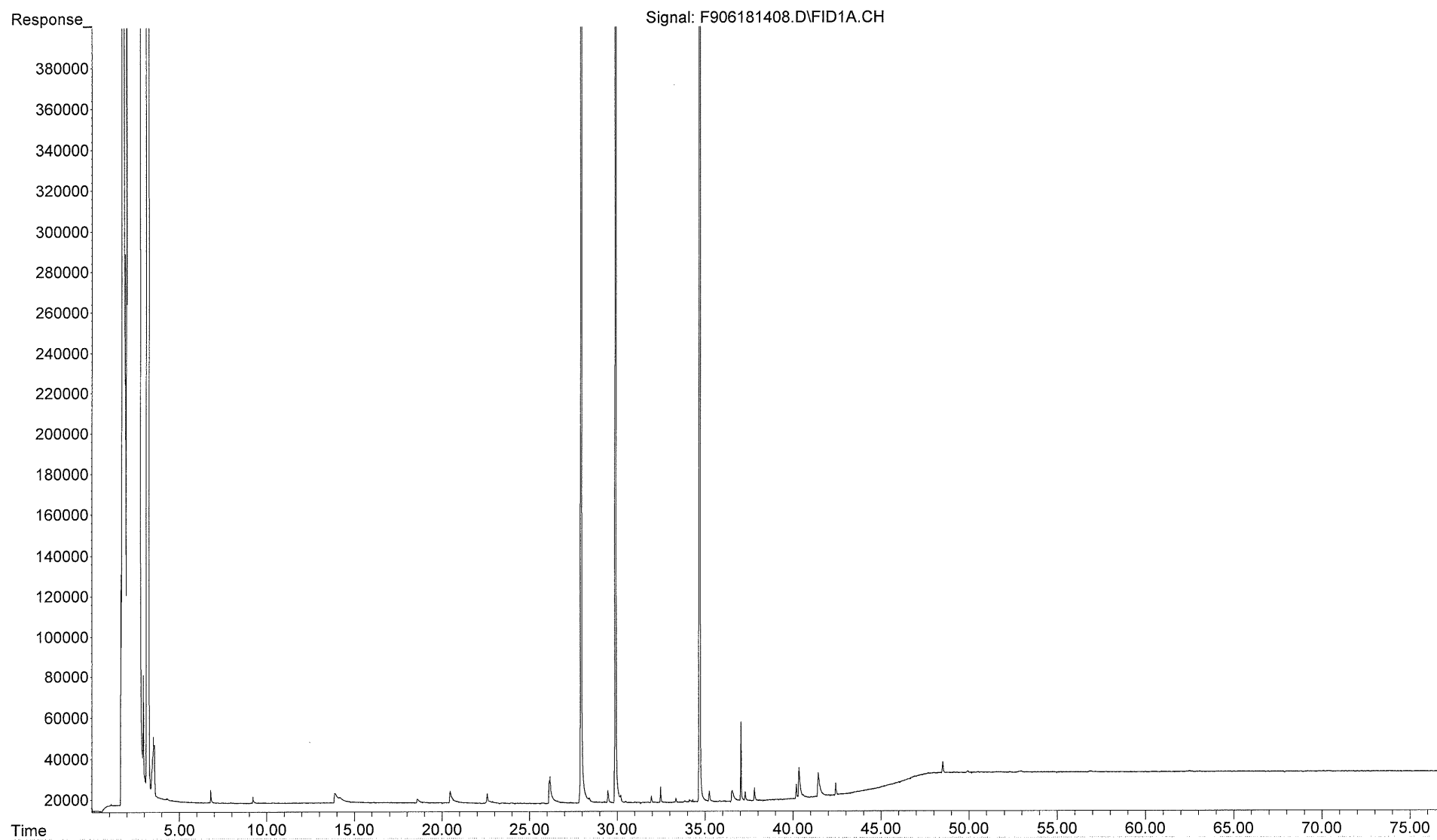
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114004.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 11 Jun 2014 2:33 pm using AcqMethod FID9A.M
Sample Name: ANS
Misc Info : WHAT89

**North Slope Crude
Reference Standard**



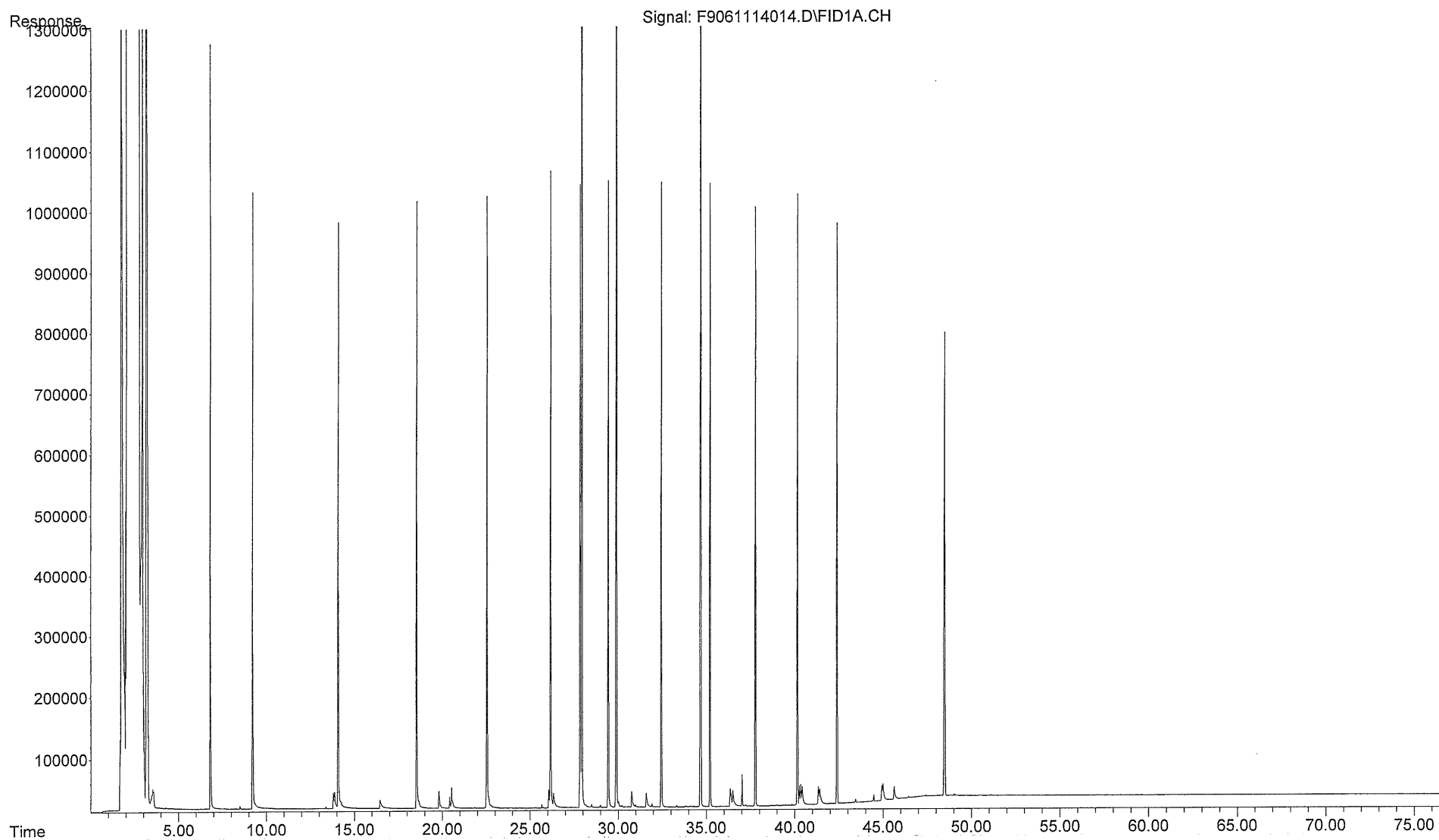
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\Blan
... k Re-analysis\F906181408.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 18 Jun 2014 1:56 pm using AcqMethod FID9A.M
Sample Name: SS061014B01
Misc Info : 1X ETR 1406002

Method Blank
SS061014B01



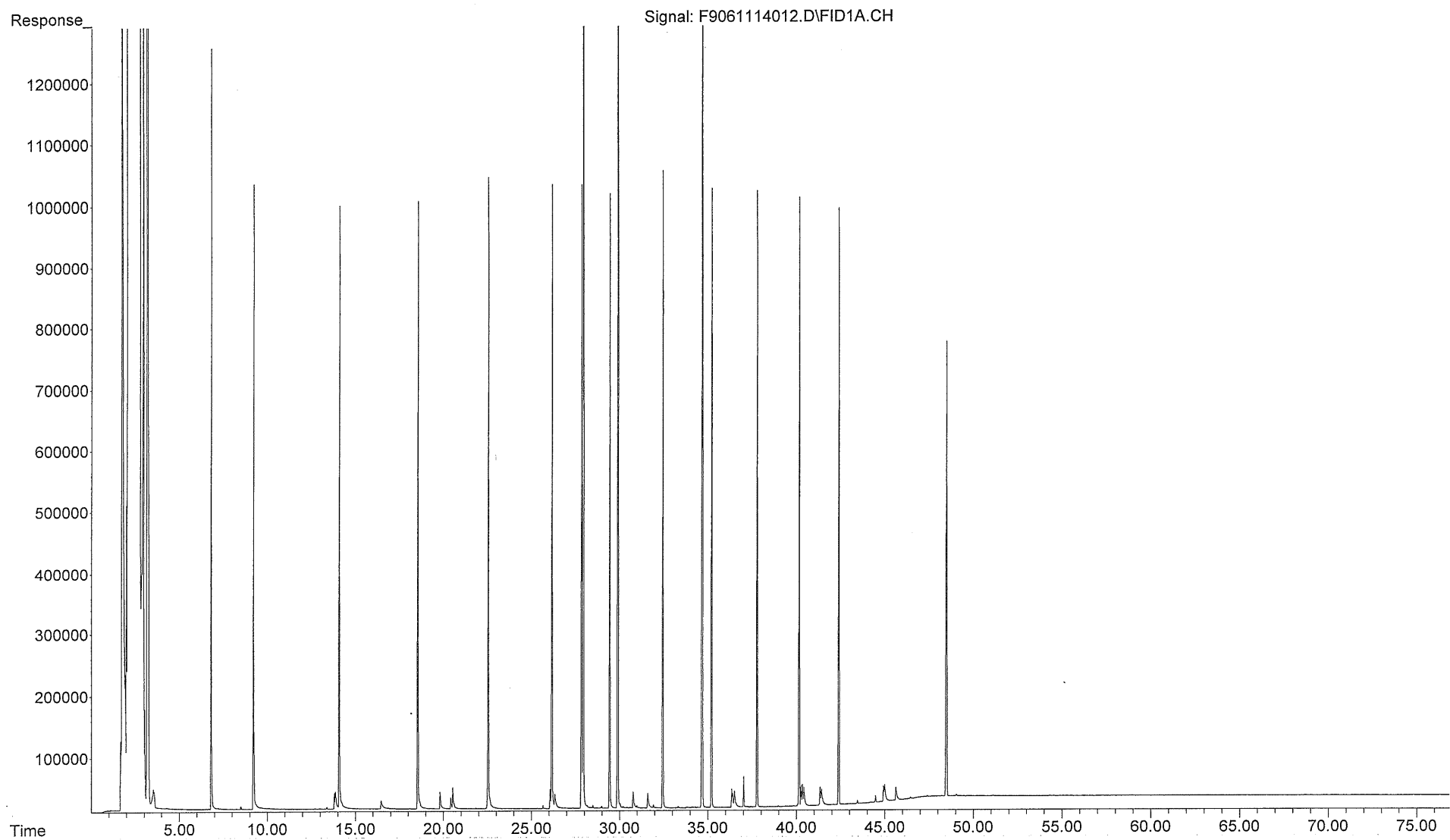
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114014.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 11 Jun 2014 9:52 pm using AcqMethod FID9A.M
Sample Name: SS061014LCS01
Misc Info : 1X ETR 1406002

**Lab Control Sample
SS061014LCS01**



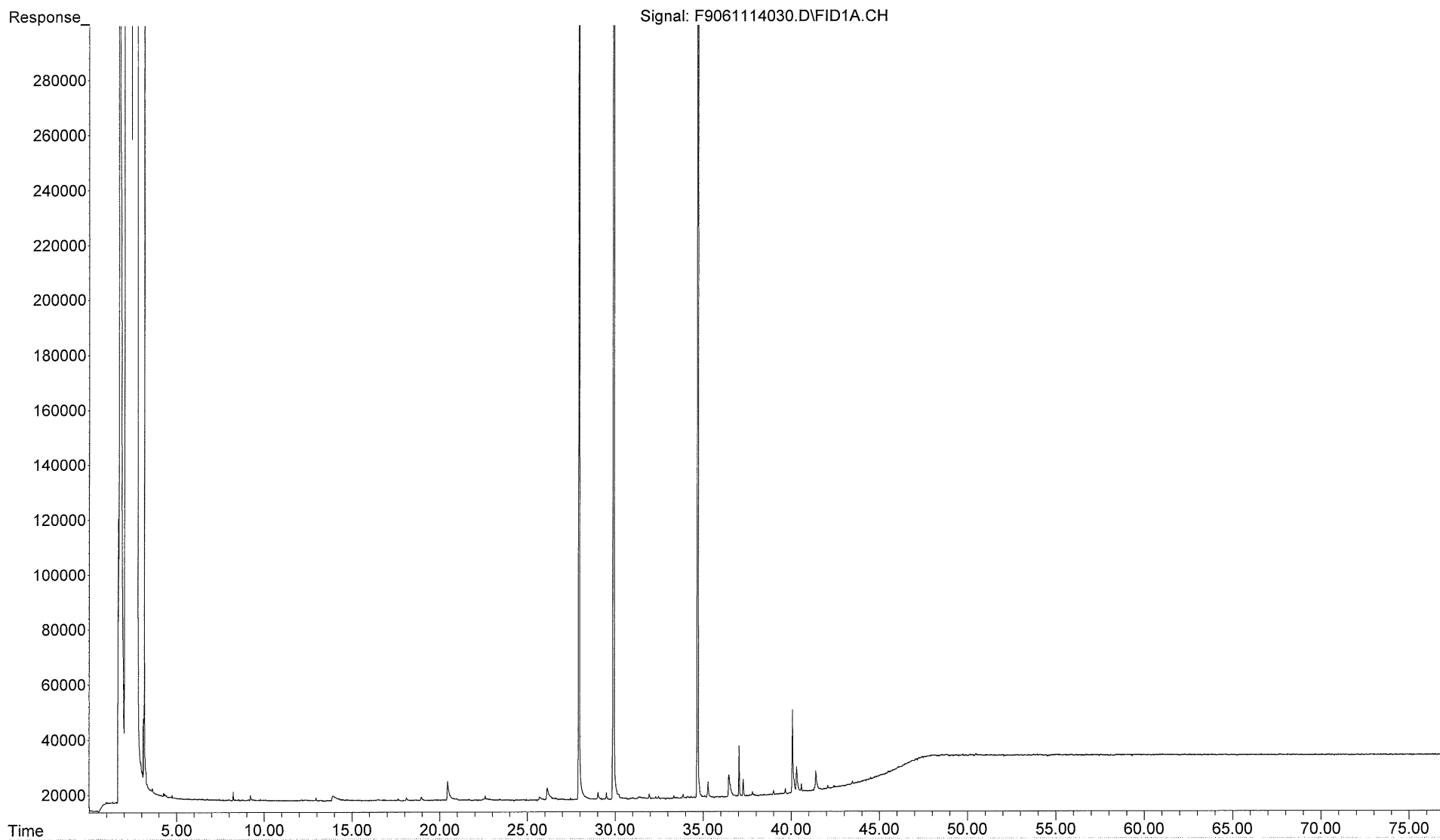
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114012.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 11 Jun 2014 8:24 pm using AcqMethod FID9A.M
Sample Name: SS061014LCSD01
Misc Info : 1X ETR 1406002

Lab Control Sample Duplicate
SS061014LCSD01



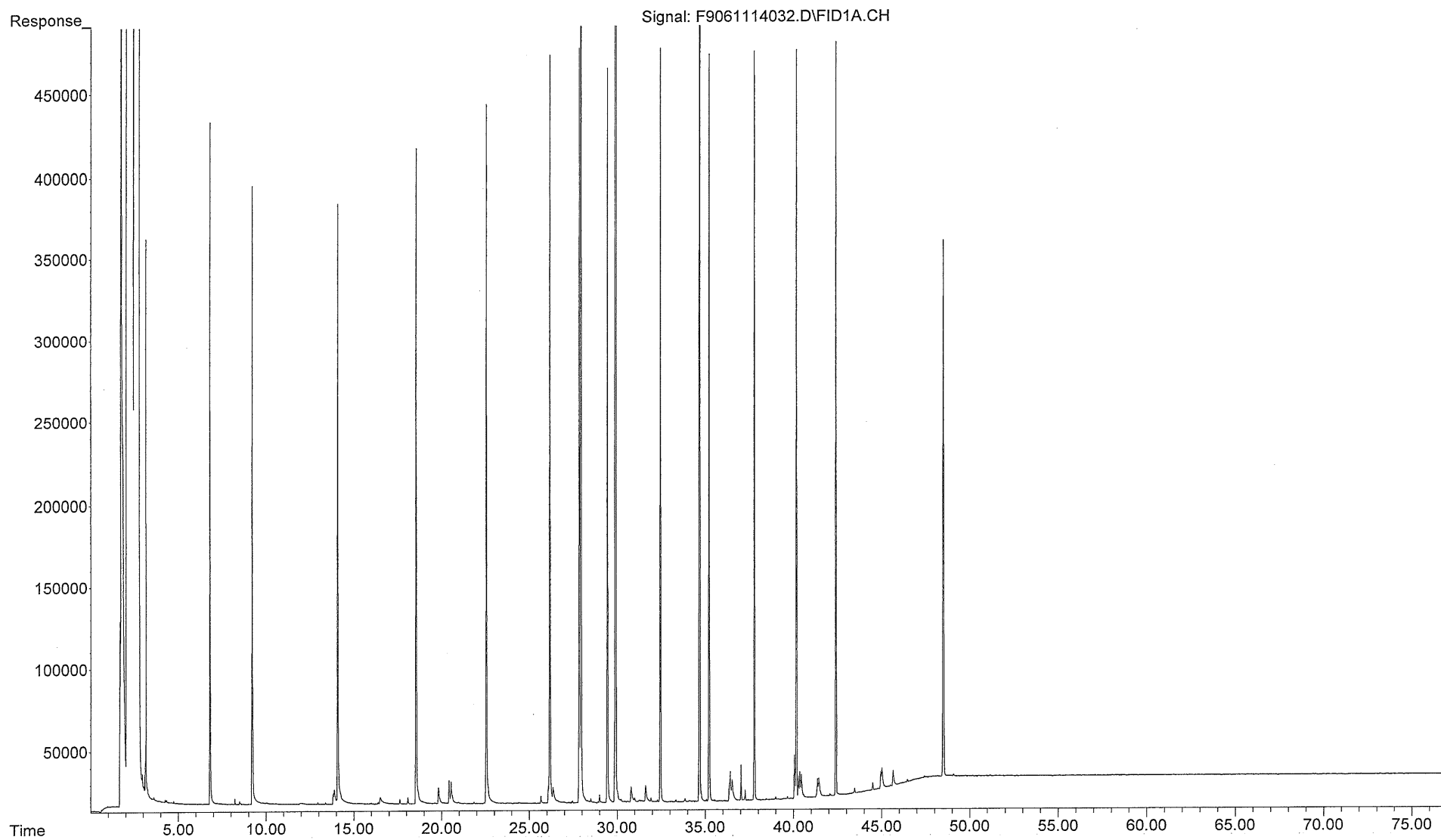
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114030.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 11:22 am using AcqMethod FID9A.M
Sample Name: TS060614B04
Misc Info : 1X ETR 1406002

**Method Blank
TS060614B04**



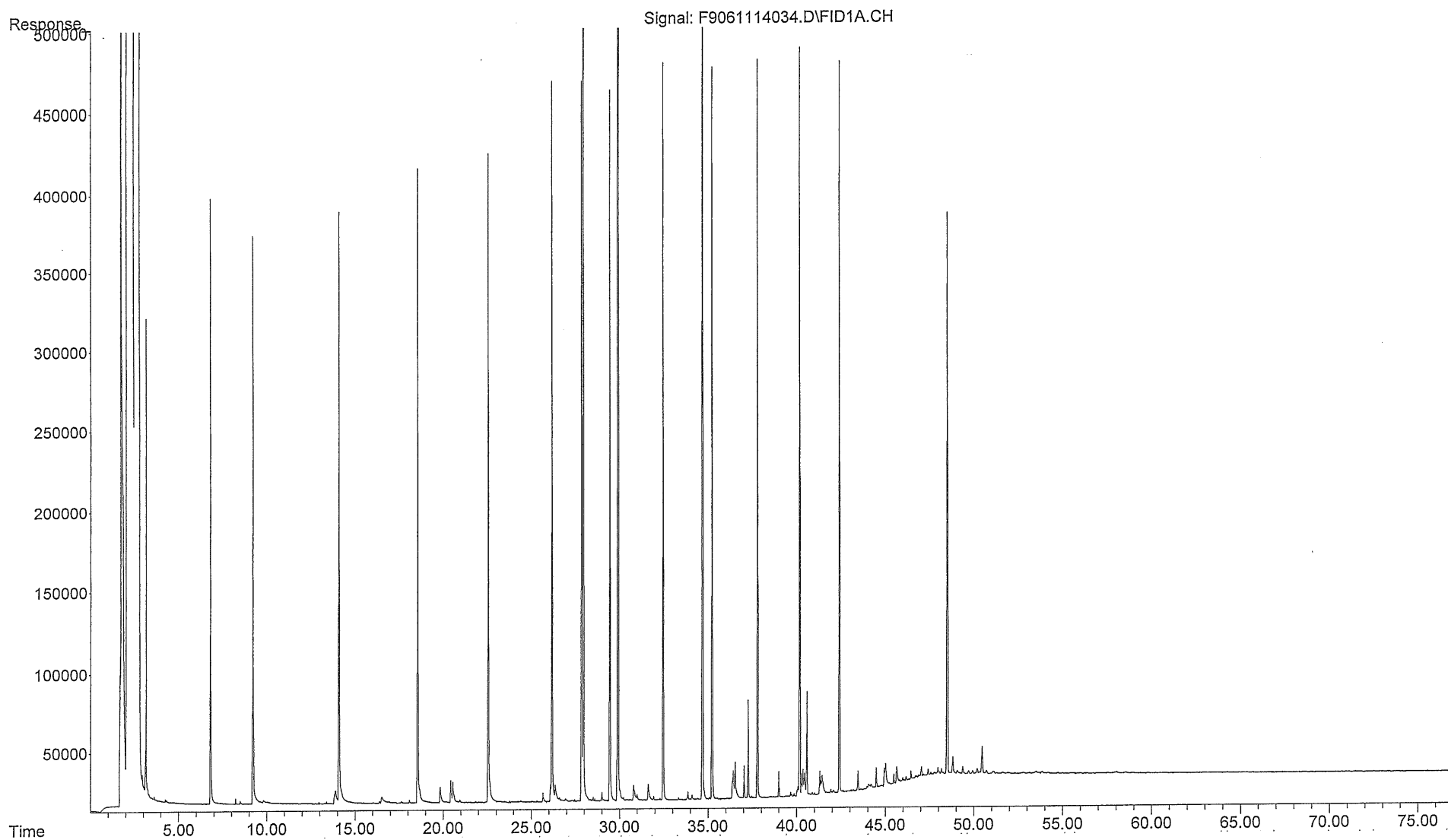
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114032.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 12:51 pm using AcqMethod FID9A.M
Sample Name: TS060614LCS03
Misc Info : 1X ETR 1406002

**Lab Control Sample
TS060614LCS03**



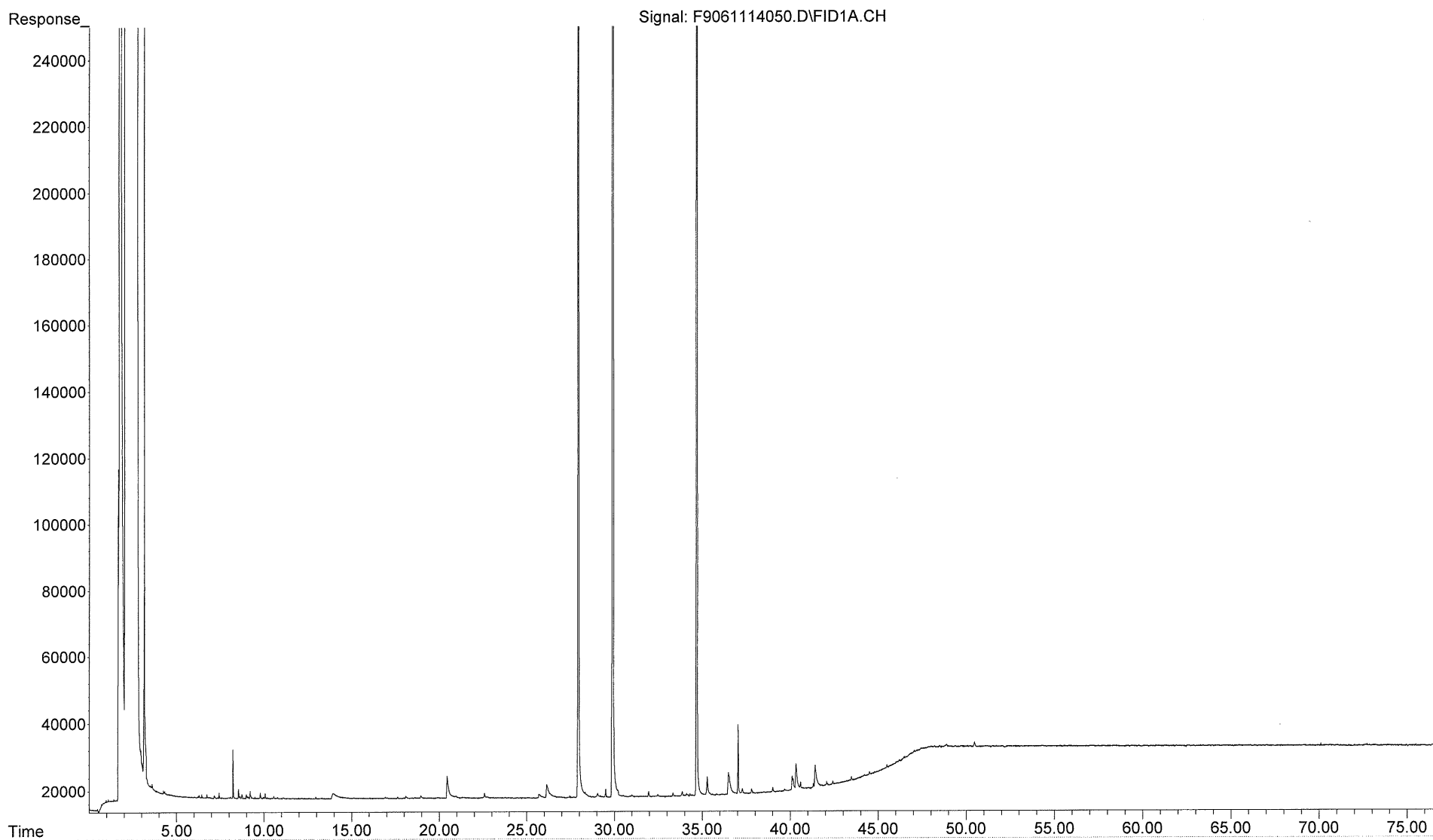
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114034.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 12 Jun 2014 2:20 pm using AcqMethod FID9A.M
Sample Name: TS060614LCSD02
Misc Info : 1X ETR 1406002

Lab Control Sample Duplicate
TS060614LCSD02



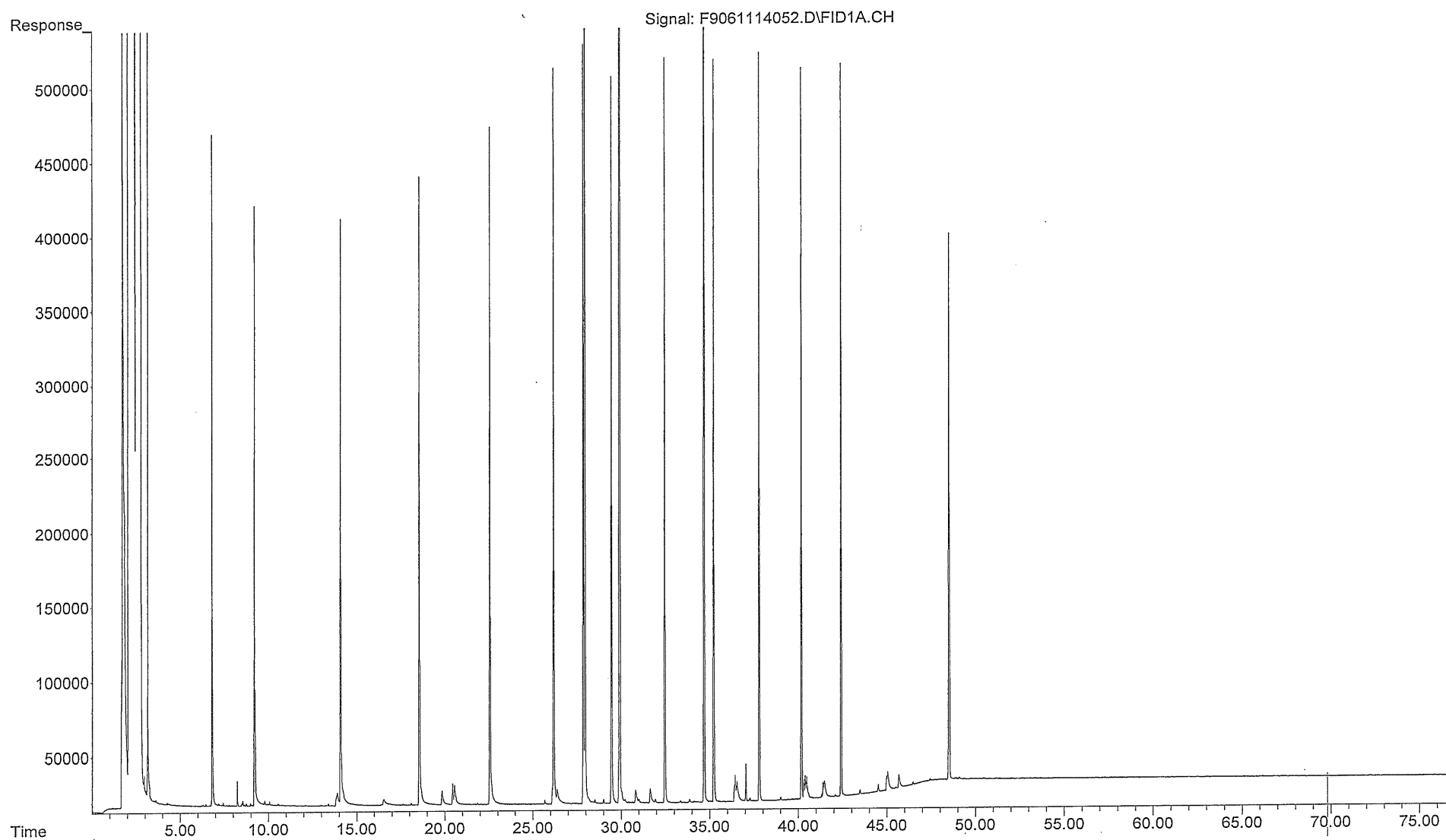
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114050.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 13 Jun 2014 2:19 am using AcqMethod FID9A.M
Sample Name: TS061014B02
Misc Info : 1X ETR 1406002

Method Blank
TS061014B02



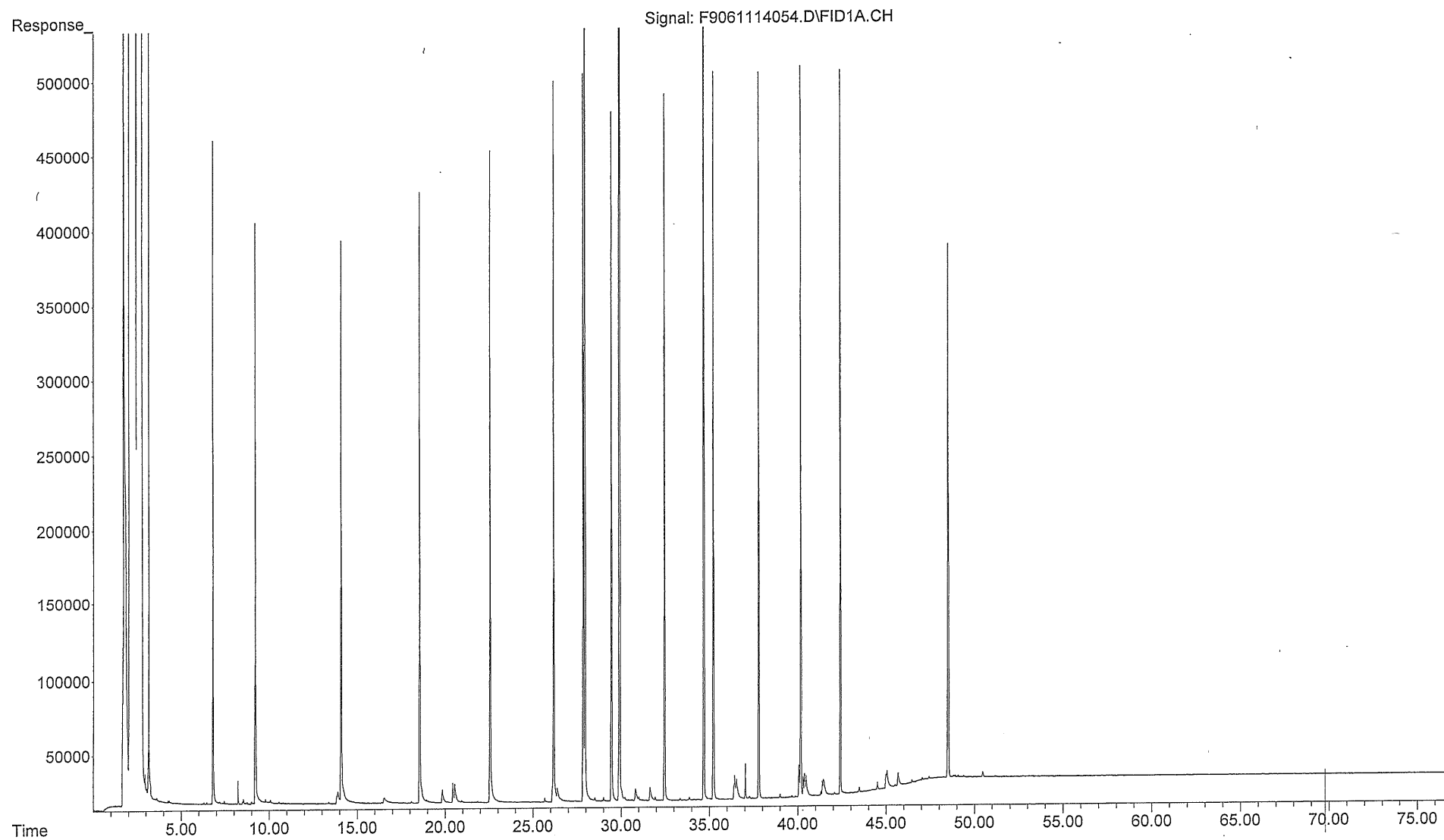
File :Y:\2014 AWHL Data\GZA 642 Allens Ave\1406002\Prelim FID\F906
... 1114052.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 13 Jun 2014 3:46 am using AcqMethod FID9A.M
Sample Name: TS061014LCS02
Misc Info : 1X ETR 1406002

Lab Control Sample
TS061014LCS02



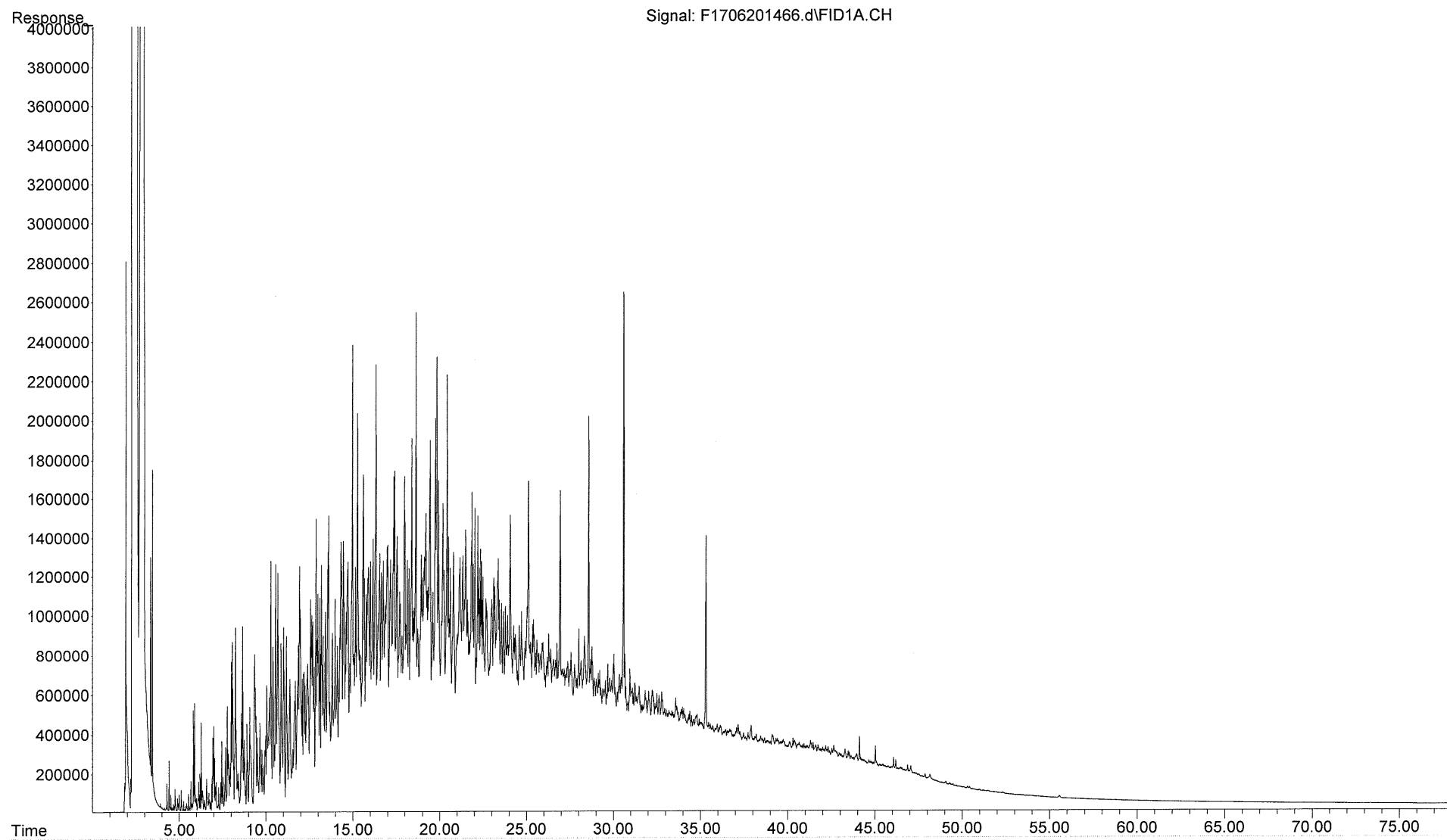
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... 1114054.D
Operator : FID9:NL
Instrument : FID 9
Acquired : 13 Jun 2014 5:14 am using AcqMethod FID9A.M
Sample Name: TS061014LCSD02
Misc Info : 1X ETR 1406002

Lab Control Sample Duplicate
TS061014LCSD02



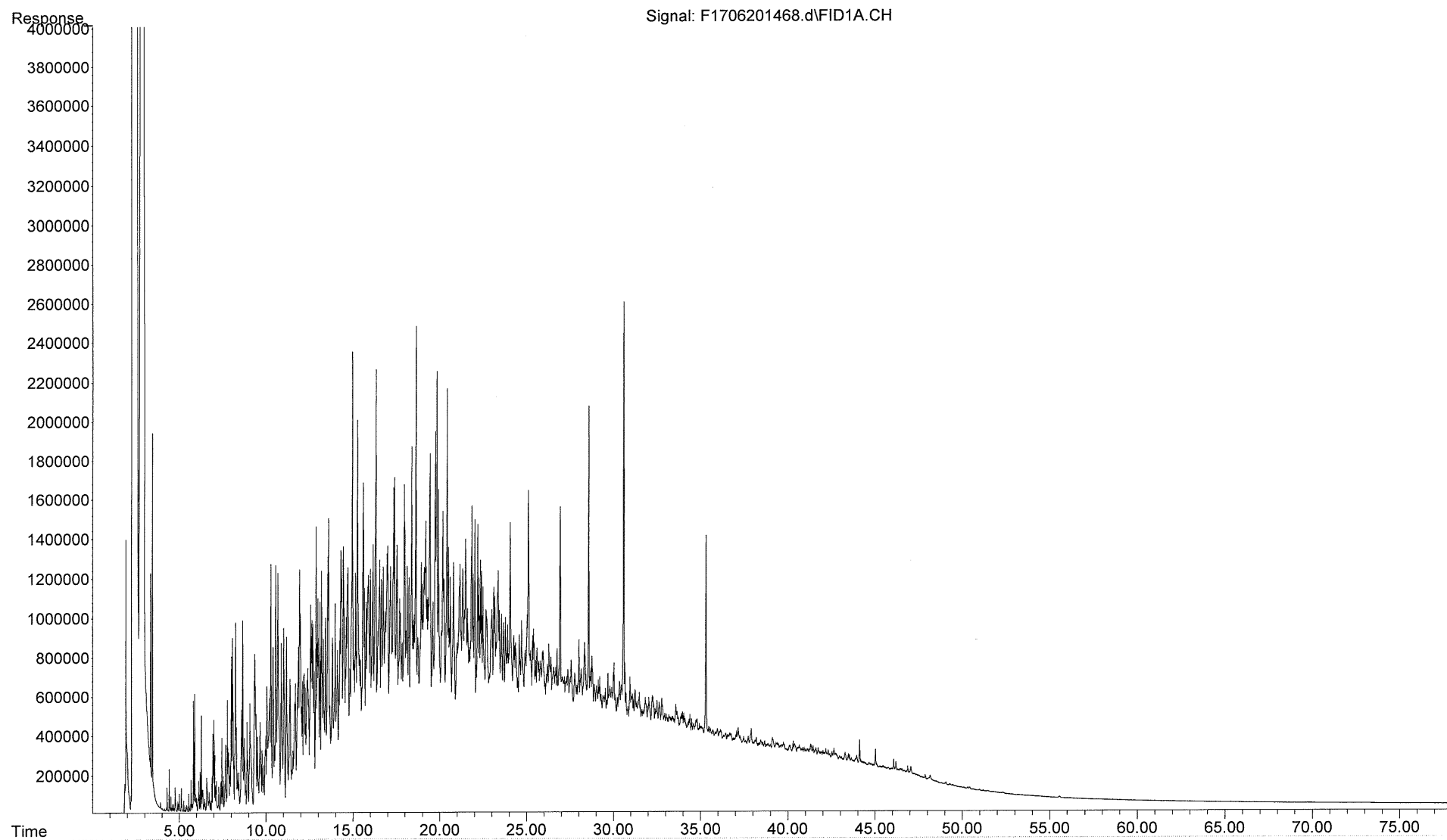
File :U:\2014 AWHL Data\GZA 642 Allens Ave\1406010\Preliminary FID
... \F1706201466.d
Operator : FID17:jt
Instrument : FID17
Acquired : 22 Jun 2014 5:05 pm using AcqMethod FID17.M
Sample Name: 1406010-01
Misc Info : 1X

GZ-307SR S-6
1406010-01



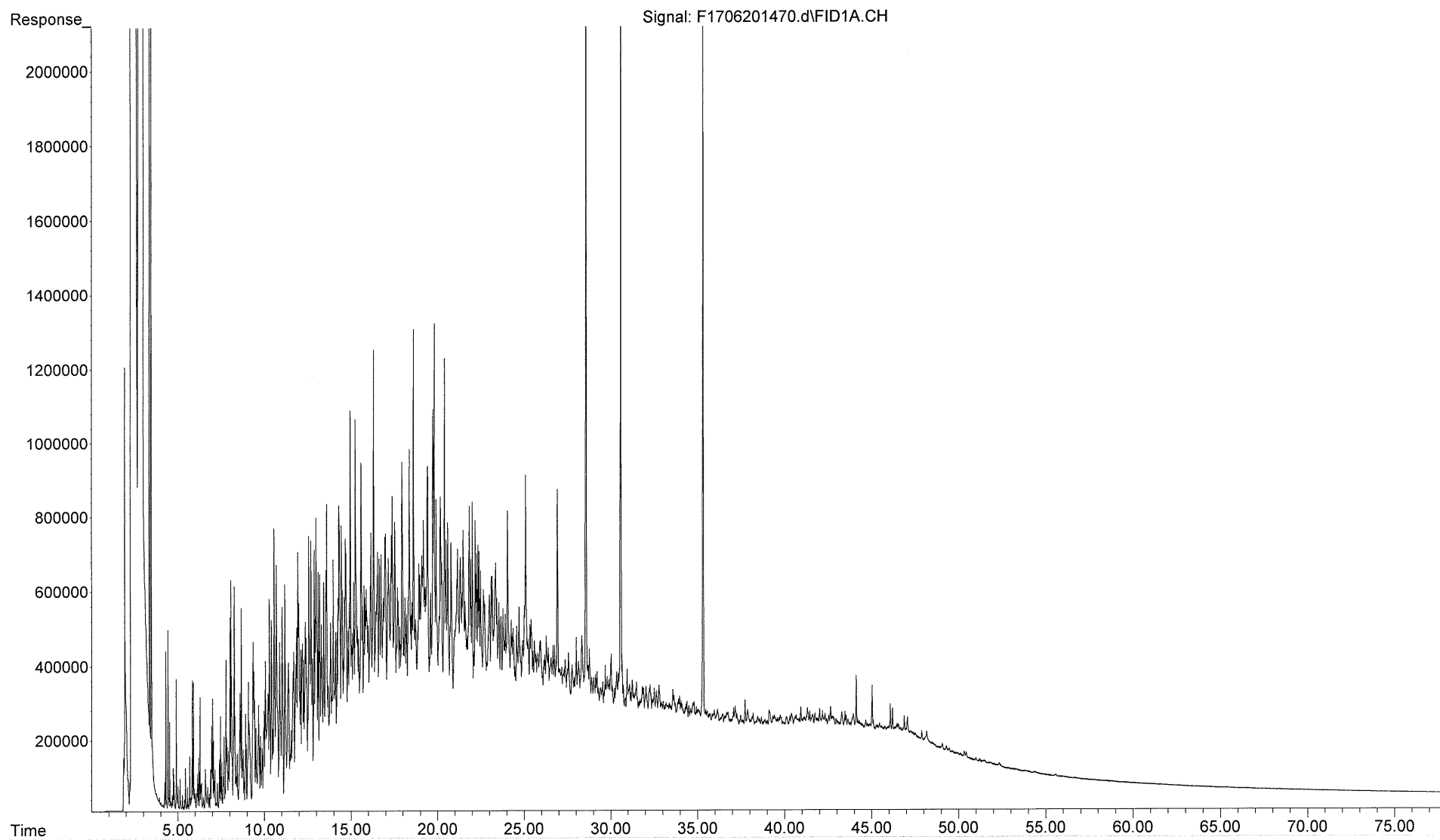
File :U:\2014 AWHL Data\GZA 642 Allens Ave\1406010\Preliminary FID
... \F1706201468.d
Operator : FID17:jt
Instrument : FID17
Acquired : 22 Jun 2014 6:35 pm using AcqMethod FID17.M
Sample Name: 1406010-01D
Misc Info : 1X

GZ-307SR S-6
1406010-01D



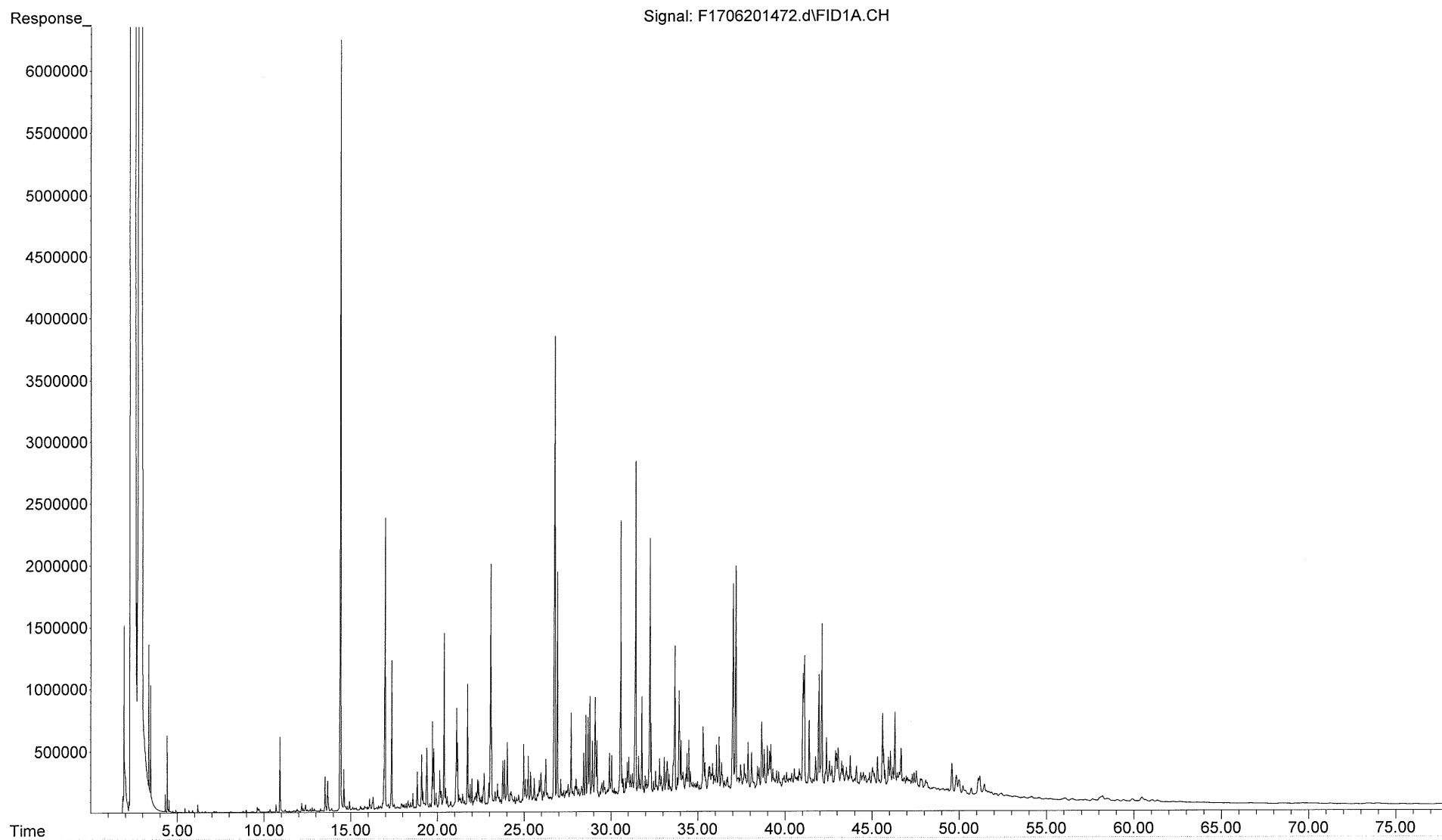
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... \F1706201470.d
Operator : FID17:jt
Instrument : FID17
Acquired : 22 Jun 2014 8:06 pm using AcqMethod FID17.M
Sample Name: 1406010-02
Misc Info : 1X

GZ-308SR S-4
1406010-02



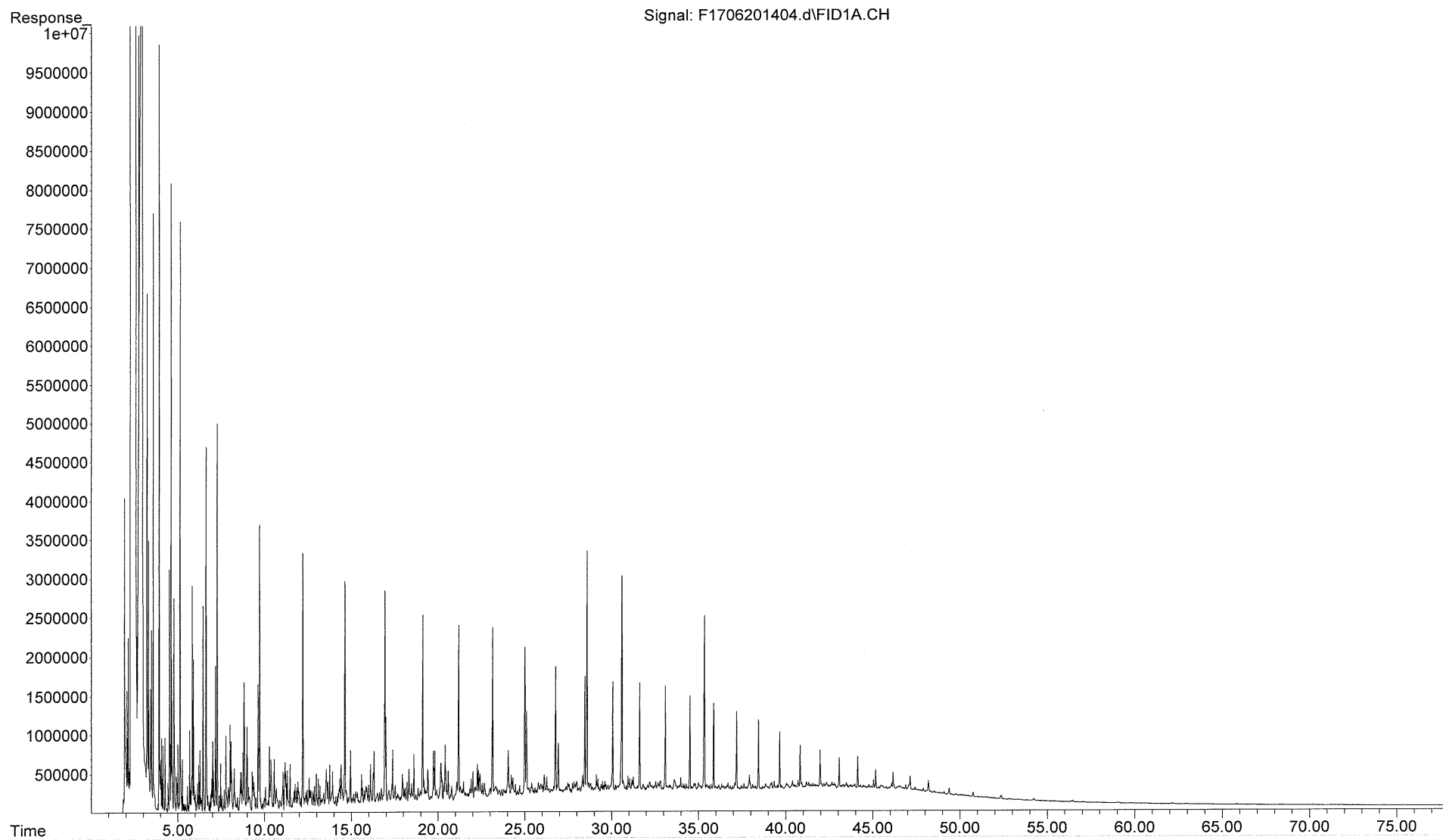
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... \F1706201472.d
Operator : FID17:jt
Instrument : FID17
Acquired : 22 Jun 2014 9:36 pm using AcqMethod FID17.M
Sample Name: 1406010-03
Misc Info : 1X

GZ-310 S-5A
1406010-03



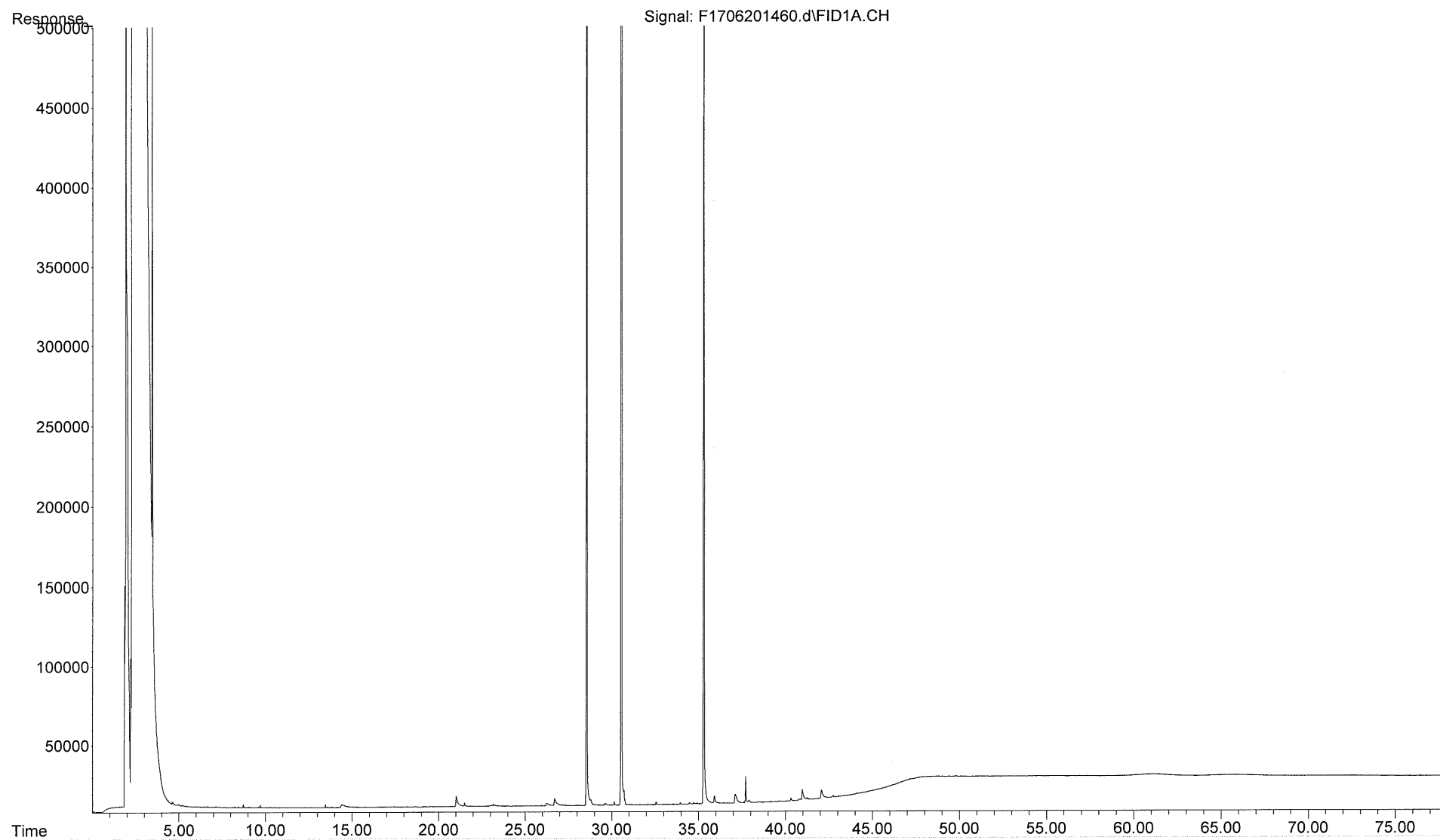
File :U:\2014 AWHL Data\GZA 642 Allens Ave\1406010\Preliminary FID
... \F1706201404.d
Operator : FID17:jt
Instrument : FID17
Acquired : 20 Jun 2014 6:21 pm using AcqMethod FID17.M
Sample Name: ANS
Misc Info : WHAT89

**North Slope Crude
Reference Standard**



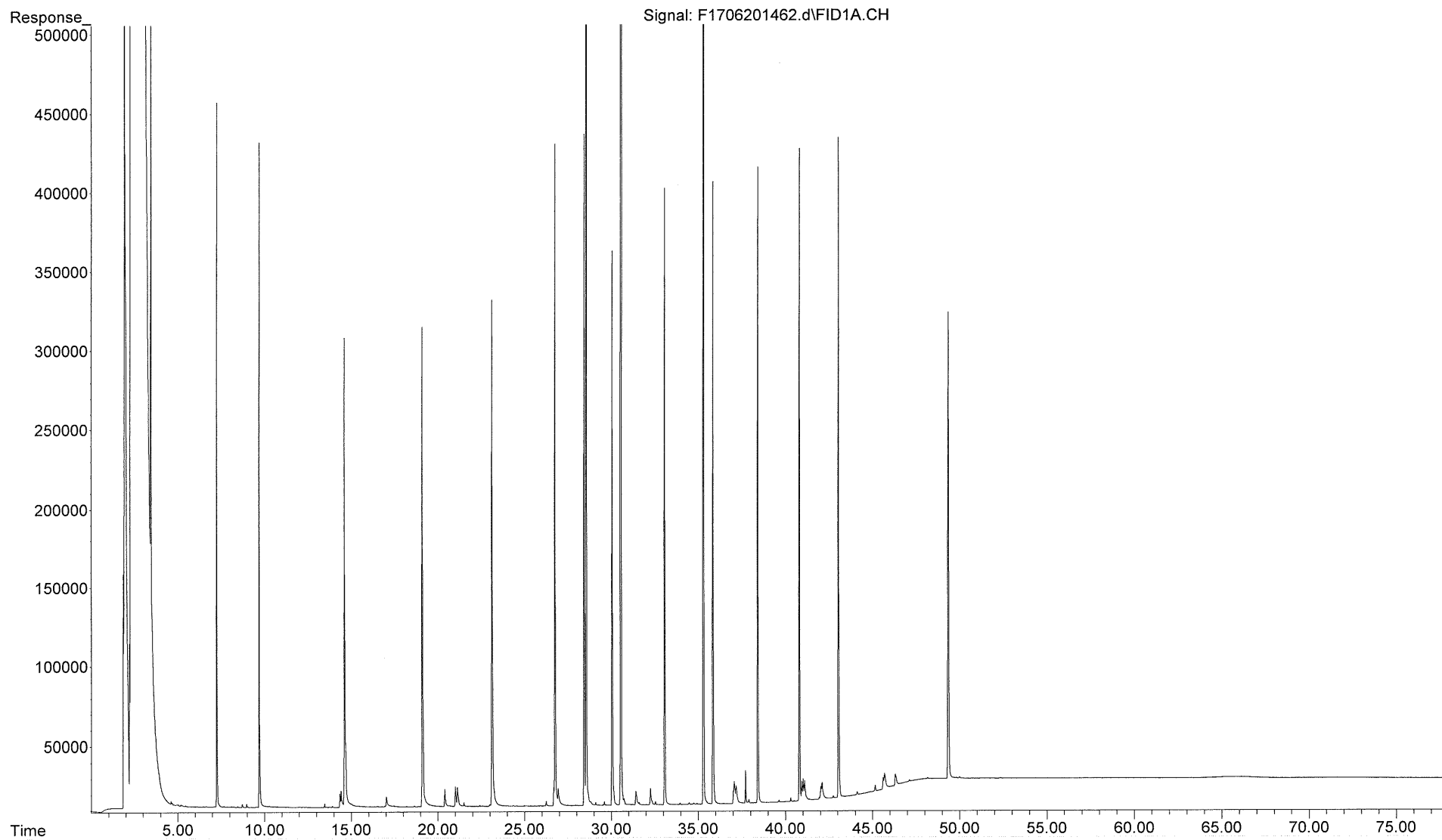
File :U:\2014 AWHL Data\GZA 642 Allens Ave\1406010\Preliminary FID
... \F1706201460.d
Operator : FID17:jt
Instrument : FID17
Acquired : 22 Jun 2014 12:35 pm using AcqMethod FID17.M
Sample Name: SS061814B02
Misc Info : 1X ETR 1406010

Method Blank
SS061814B02



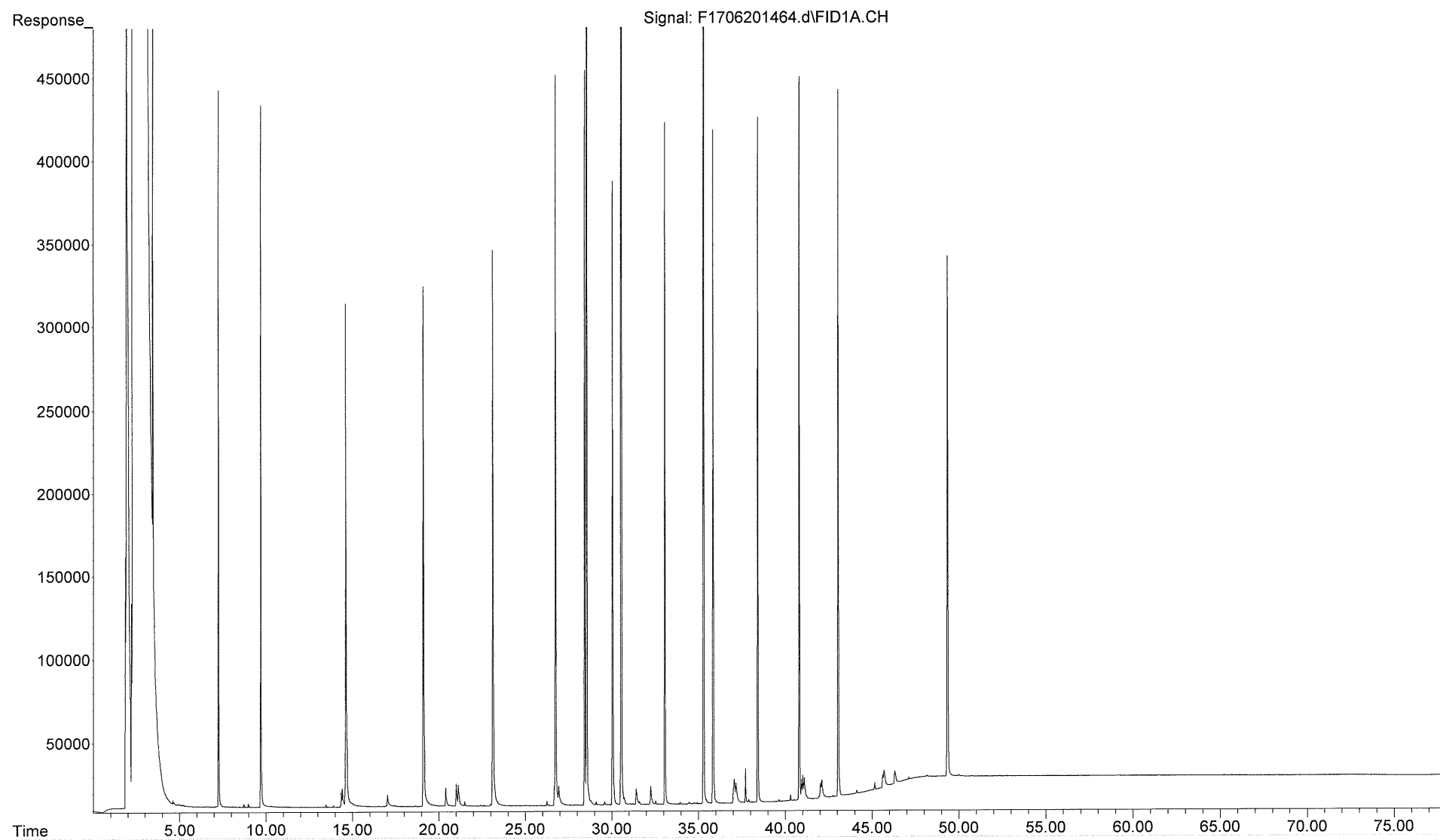
File :U:\2014 AWHL Data\GZA 642 Allens Ave\1406010\Preliminary FID
... \F1706201462.d
Operator : FID17:jt
Instrument : FID17
Acquired : 22 Jun 2014 2:05 pm using AcqMethod FID17.M
Sample Name: SS061814LCS02
Misc Info : 1X ETR 1406010

**Lab Control Sample
SS061814LCS02**



File :U:\2014 AWHL Data\GZA 642 Allens Ave\1406010\Preliminary FID
... \F1706201464.d
Operator : FID17:jt
Instrument : FID17
Acquired : 22 Jun 2014 3:35 pm using AcqMethod FID17.M
Sample Name: SS061814LCSD02
Misc Info : 1X ETR 1406010

Lab Control Sample Duplicate
SS061814LCSD02



Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------|
| Client ID | Method Blank |
| Lab ID | TS060314B01 |
| Matrix | Soil |
| Reference Method | SHC |
| Batch ID | TS060314B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/03/2014 |
| Date Analyzed | 06/09/2014 |
| Sample Size (wet) | 10 |
| % Solid | 100.00 |
| File ID | F1706091411.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 6.60 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | U | 6.60 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 84 |
| d50-Tetracosane | 89 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | TS060314LCS01 |
| Matrix | Soil |
| Reference Method | SHC |
| Batch ID | TS060314B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/03/2014 |
| Date Analyzed | 06/09/2014 |
| Sample Size (wet) | 10 |
| % Solid | 100.00 |
| File ID | F1706091413.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.200 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | |
|-------|--------|-------------------------|--------|------|-------|-------------|-------------|-------------|-----|
| SHC | C9 | n-Nonane (C9) | 1.18 | S | 0.200 | 59 | 2.00 | 50 | 130 |
| SHC | C10 | n-Decane (C10) | 1.42 | S | 0.200 | 71 | 2.00 | 50 | 130 |
| SHC | C12 | n-Dodecane (C12) | 1.59 | S | 0.200 | 80 | 2.00 | 50 | 130 |
| SHC | C14 | n-Tetradecane (C14) | 1.63 | S | 0.200 | 82 | 2.00 | 50 | 130 |
| SHC | C16 | n-Hexadecane (C16) | 1.78 | S | 0.200 | 89 | 2.00 | 50 | 130 |
| SHC | C18 | n-Octadecane (C18) | 1.86 | S | 0.200 | 93 | 2.00 | 50 | 130 |
| SHC | C19 | n-Nonadecane (C19) | 1.77 | S | 0.200 | 89 | 2.00 | 50 | 130 |
| SHC | C20 | n-Eicosane (C20) | 1.77 | S | 0.200 | 89 | 2.00 | 50 | 130 |
| SHC | C22 | n-Docosane (C22) | 1.79 | S | 0.200 | 90 | 2.00 | 50 | 130 |
| SHC | C24 | n-Tetracosane (C24) | 1.85 | S | 0.200 | 92 | 2.00 | 50 | 130 |
| SHC | C26 | n-Hexacosane (C26) | 1.77 | S | 0.200 | 89 | 2.00 | 50 | 130 |
| SHC | C28 | n-Octacosane (C28) | 1.83 | S | 0.200 | 91 | 2.00 | 50 | 130 |
| SHC | C30 | n-Triacontane (C30) | 1.85 | S | 0.200 | 92 | 2.00 | 50 | 130 |
| SHC | C36 | n-Hexatriacontane (C36) | 1.74 | S | 0.200 | 87 | 2.00 | 50 | 130 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 87 |
| d50-Tetracosane | 91 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|-------------------------------|
| Client ID | Laboratory Control Sample Dup |
| Lab ID | TS060314LCS01 |
| Matrix | Soil |
| Reference Method | SHC |
| Batch ID | TS060314B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/03/2014 |
| Date Analyzed | 06/09/2014 |
| Sample Size (wet) | 10 |
| % Solid | 100.00 |
| File ID | F1706091415.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.200 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit | |
|-------|--------|-------------------------|--------|------|-------|-------------|-------------|-------------|-----|-----------|----|
| SHC | C9 | n-Nonane (C9) | 1.18 | S | 0.200 | 59 | 2.00 | 50 | 130 | 0 | 30 |
| SHC | C10 | n-Decane (C10) | 1.47 | S | 0.200 | 73 | 2.00 | 50 | 130 | 3 | 30 |
| SHC | C12 | n-Dodecane (C12) | 1.67 | S | 0.200 | 84 | 2.00 | 50 | 130 | 5 | 30 |
| SHC | C14 | n-Tetradecane (C14) | 1.71 | S | 0.200 | 85 | 2.00 | 50 | 130 | 5 | 30 |
| SHC | C16 | n-Hexadecane (C16) | 1.86 | S | 0.200 | 93 | 2.00 | 50 | 130 | 4 | 30 |
| SHC | C18 | n-Octadecane (C18) | 1.94 | S | 0.200 | 97 | 2.00 | 50 | 130 | 5 | 30 |
| SHC | C19 | n-Nonadecane (C19) | 1.86 | S | 0.200 | 93 | 2.00 | 50 | 130 | 5 | 30 |
| SHC | C20 | n-Eicosane (C20) | 1.86 | S | 0.200 | 93 | 2.00 | 50 | 130 | 5 | 30 |
| SHC | C22 | n-Docosane (C22) | 1.88 | S | 0.200 | 94 | 2.00 | 50 | 130 | 5 | 30 |
| SHC | C24 | n-Tetracosane (C24) | 1.94 | S | 0.200 | 97 | 2.00 | 50 | 130 | 5 | 30 |
| SHC | C26 | n-Hexacosane (C26) | 1.86 | S | 0.200 | 93 | 2.00 | 50 | 130 | 5 | 30 |
| SHC | C28 | n-Octacosane (C28) | 1.90 | S | 0.200 | 95 | 2.00 | 50 | 130 | 4 | 30 |
| SHC | C30 | n-Triacontane (C30) | 1.93 | S | 0.200 | 97 | 2.00 | 50 | 130 | 4 | 30 |
| SHC | C36 | n-Hexatriacontane (C36) | 1.83 | S | 0.200 | 92 | 2.00 | 50 | 130 | 5 | 30 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 90 |
| d50-Tetracosane | 94 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | | |
|-------------------|---------------|---------------|
| Client ID | GZ-309D S-4 | GZ-309D S-4 |
| Lab ID | 1405021-04 | 1405021-04D |
| Matrix | Soil | Soil |
| Reference Method | SHC | SHC |
| Batch ID | TS060314B01 | TS060314B01 |
| Date Collected | 05/20/2014 | 05/20/2014 |
| Date Received | 05/23/2014 | 05/23/2014 |
| Date Prepped | 06/03/2014 | 06/03/2014 |
| Date Analyzed | 06/10/2014 | 06/10/2014 |
| Sample Size (wet) | 14.98 | 14.99 |
| % Solid | 84.66 | 84.66 |
| File ID | F1706091423.D | F1706091425.D |
| Units | mg/Kg | mg/Kg |
| Final Volume | 16 | 16 |
| Dilution | 1 | 1 |
| Reporting Limit | 41.6 | 41.6 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | RPD | RPD Limit |
|-------|--------|---------------------------------------|--------|------|--------|------|-----|-----------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 6330 | 41.6 | 6140 | 41.6 | 3 | 30 |

| | | |
|-------------------------|----|----|
| Surrogates (% Recovery) | | |
| ortho-Terphenyl | 80 | 83 |
| d50-Tetracosane | 91 | 92 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------------|
| Client ID | Alaska North Slope Crude |
| Lab ID | TS110713ANC02 |
| Matrix | Oil |
| Reference Method | SHC |
| Batch ID | N/A |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 11/06/2013 |
| Sample Size (wet) | 0.101 |
| % Solid | 100.00 |
| File ID | A009794.D |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 3270 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---------------------------------------|--------|------|-------|-------------|-------------|-------------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 524000 | 3270 | 94 | 554993.00 | 65 | 135 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | GZ-305S S-5 | GZ-306S S-4 | GZ-306S S-5 | GZ-309D S-4 |
|-------------------|---------------|---------------|---------------|---------------|
| Client ID | GZ-305S S-5 | GZ-306S S-4 | GZ-306S S-5 | GZ-309D S-4 |
| Lab ID | 1405021-01 | 1405021-02 | 1405021-03 | 1405021-04 |
| Matrix | Soil | Soil | Soil | Soil |
| Reference Method | SHC | SHC | SHC | SHC |
| Batch ID | TS060314B01 | TS060314B01 | TS060314B01 | TS060314B01 |
| Date Collected | 05/22/2014 | 05/22/2014 | 05/22/2014 | 05/20/2014 |
| Date Received | 05/23/2014 | 05/23/2014 | 05/23/2014 | 05/23/2014 |
| Date Prepped | 06/03/2014 | 06/03/2014 | 06/03/2014 | 06/03/2014 |
| Date Analyzed | 06/09/2014 | 06/09/2014 | 06/10/2014 | 06/10/2014 |
| Sample Size (wet) | 15.01 | 5.05 | 6.05 | 14.98 |
| % Solid | 81.84 | 74.28 | 81.90 | 84.66 |
| File ID | F1706091417.D | F1706091419.D | F1706091421.D | F1706091423.D |
| Units | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| Final Volume | 5.71 | 80 | 16 | 16 |
| Dilution | 1 | 1 | 1 | 1 |
| Reporting Limit | 15.3 | 704 | 107 | 41.6 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | Result | SSRL | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|--------|------|--------|------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 1920 | 15.3 | 68500 | 704 | 15300 | 107 | 6330 | 41.6 |

| Surrogates (% Recovery) | Result | SSRL | Result | SSRL | Result | SSRL |
|-------------------------|--------|------|--------|------|--------|------|
| ortho-Terphenyl | 86 | 97 | 83 | 80 | 80 | 91 |
| d50-Tetracosane | 93 | 129 | 97 | 91 | 91 | 91 |

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
#: Value outside of QC Limits.
\$: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
x: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
\$: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

Project Name: GZA-642 Allens Ave
 Project Number:

| | | | |
|-------------------|---------------|---------------|---------------|
| Client ID | Method Blank | Method Blank | Method Blank |
| Lab ID | SS061014B01 | TS060614B04 | TS061014B02 |
| Matrix | Solid | Soil | Soil |
| Reference Method | SHC | SHC | SHC |
| Batch ID | SS061014B01 | TS060614B04 | TS061014B02 |
| Date Collected | N/A | N/A | N/A |
| Date Received | N/A | N/A | N/A |
| Date Prepped | 06/10/2014 | 06/06/2014 | 06/10/2013 |
| Date Analyzed | 06/11/2014 | 06/12/2014 | 06/13/2014 |
| Sample Size (wet) | 0.005 | 27 | 30 |
| % Solid | 100.00 | 100.00 | 100.00 |
| File ID | F9061114016.D | F9061114030.D | F9061114050.D |
| Units | mg/Kg | mg/Kg | mg/Kg |
| Final Volume | 1 | 2 | 2 |
| Dilution | 1 | 1 | 1 |
| Reporting Limit | 6600 | 2.44 | 2.20 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | Result | SSRL |
|-------------------------|--------|---------------------------------------|--------|------|--------|--------|--------|--------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | U | 6600 | 0.445 | J 2.44 | 0.335 | J 2.20 |
| Surrogates (% Recovery) | | | | | | | | |
| | | ortho-Terphenyl | 94 | | 79 | | 81 | |
| | | d50-Tetracosane | 96 | | 82 | | 85 | |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | TS060614LCS03 |
| Matrix | Soil |
| Reference Method | SHC |
| Batch ID | TS060614B04 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/06/2014 |
| Date Analyzed | 06/12/2014 |
| Sample Size (wet) | 27 |
| % Solid | 100.00 |
| File ID | F9061114032.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0741 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | |
|-------|--------|-------------------------|--------|------|--------|-------------|-------------|-------------|-----|
| SHC | C9 | n-Nonane (C9) | 0.459 | S | 0.0741 | 62 | 0.741 | 50 | 130 |
| SHC | C10 | n-Decane (C10) | 0.511 | S | 0.0741 | 69 | 0.741 | 50 | 130 |
| SHC | C12 | n-Dodecane (C12) | 0.592 | S | 0.0741 | 80 | 0.741 | 50 | 130 |
| SHC | C14 | n-Tetradecane (C14) | 0.576 | S | 0.0741 | 78 | 0.741 | 50 | 130 |
| SHC | C16 | n-Hexadecane (C16) | 0.648 | S | 0.0741 | 87 | 0.741 | 50 | 130 |
| SHC | C18 | n-Octadecane (C18) | 0.663 | S | 0.0741 | 89 | 0.741 | 50 | 130 |
| SHC | C19 | n-Nonadecane (C19) | 0.615 | BS | 0.0741 | 83 | 0.741 | 50 | 130 |
| SHC | C20 | n-Eicosane (C20) | 0.633 | S | 0.0741 | 85 | 0.741 | 50 | 130 |
| SHC | C22 | n-Docosane (C22) | 0.639 | S | 0.0741 | 86 | 0.741 | 50 | 130 |
| SHC | C24 | n-Tetracosane (C24) | 0.645 | S | 0.0741 | 87 | 0.741 | 50 | 130 |
| SHC | C26 | n-Hexacosane (C26) | 0.617 | S | 0.0741 | 83 | 0.741 | 50 | 130 |
| SHC | C28 | n-Octacosane (C28) | 0.630 | S | 0.0741 | 85 | 0.741 | 50 | 130 |
| SHC | C30 | n-Triacontane (C30) | 0.626 | S | 0.0741 | 84 | 0.741 | 50 | 130 |
| SHC | C36 | n-Hexatriacontane (C36) | 0.552 | S | 0.0741 | 75 | 0.741 | 50 | 130 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 84 |
| d50-Tetracosane | 86 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|-------------------------------|
| Client ID | Laboratory Control Sample Dup |
| Lab ID | TS060614LCSD02 |
| Matrix | Soil |
| Reference Method | SHC |
| Batch ID | TS060614B04 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/06/2014 |
| Date Analyzed | 06/12/2014 |
| Sample Size (wet) | 27 |
| % Solid | 100.00 |
| File ID | F9061114034.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0741 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit | |
|-------|--------|-------------------------|--------|------|--------|-------------|-------------|-------------|-----|-----------|----|
| SHC | C9 | n-Nonane (C9) | 0.448 | S | 0.0741 | 60 | 0.741 | 50 | 130 | 3 | 30 |
| SHC | C10 | n-Decane (C10) | 0.512 | S | 0.0741 | 69 | 0.741 | 50 | 130 | 0 | 30 |
| SHC | C12 | n-Dodecane (C12) | 0.609 | S | 0.0741 | 82 | 0.741 | 50 | 130 | 3 | 30 |
| SHC | C14 | n-Tetradecane (C14) | 0.585 | S | 0.0741 | 79 | 0.741 | 50 | 130 | 2 | 30 |
| SHC | C16 | n-Hexadecane (C16) | 0.654 | S | 0.0741 | 88 | 0.741 | 50 | 130 | 1 | 30 |
| SHC | C18 | n-Octadecane (C18) | 0.671 | S | 0.0741 | 91 | 0.741 | 50 | 130 | 1 | 30 |
| SHC | C19 | n-Nonadecane (C19) | 0.623 | BS | 0.0741 | 84 | 0.741 | 50 | 130 | 1 | 30 |
| SHC | C20 | n-Eicosane (C20) | 0.646 | S | 0.0741 | 87 | 0.741 | 50 | 130 | 2 | 30 |
| SHC | C22 | n-Docosane (C22) | 0.653 | S | 0.0741 | 88 | 0.741 | 50 | 130 | 2 | 30 |
| SHC | C24 | n-Tetracosane (C24) | 0.666 | S | 0.0741 | 90 | 0.741 | 50 | 130 | 3 | 30 |
| SHC | C26 | n-Hexacosane (C26) | 0.650 | S | 0.0741 | 88 | 0.741 | 50 | 130 | 5 | 30 |
| SHC | C28 | n-Octacosane (C28) | 0.663 | S | 0.0741 | 90 | 0.741 | 50 | 130 | 5 | 30 |
| SHC | C30 | n-Triacontane (C30) | 0.666 | S | 0.0741 | 90 | 0.741 | 50 | 130 | 6 | 30 |
| SHC | C36 | n-Hexatriacontane (C36) | 0.596 | S | 0.0741 | 80 | 0.741 | 50 | 130 | 8 | 30 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 83 |
| d50-Tetracosane | 85 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | TS061014LCS02 |
| Matrix | Soil |
| Reference Method | SHC |
| Batch ID | TS061014B02 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/10/2013 |
| Date Analyzed | 06/13/2014 |
| Sample Size (wet) | 30 |
| % Solid | 100.00 |
| File ID | F9061114052.D |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.0667 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|-------------------------|--------|------|--------|-------------|-------------|-------------|
| SHC | C9 | n-Nonane (C9) | 0.411 | S | 0.0667 | 62 | 0.667 | 50 |
| SHC | C10 | n-Decane (C10) | 0.463 | S | 0.0667 | 69 | 0.667 | 50 |
| SHC | C12 | n-Dodecane (C12) | 0.541 | S | 0.0667 | 81 | 0.667 | 50 |
| SHC | C14 | n-Tetradecane (C14) | 0.530 | S | 0.0667 | 80 | 0.667 | 50 |
| SHC | C16 | n-Hexadecane (C16) | 0.595 | S | 0.0667 | 89 | 0.667 | 50 |
| SHC | C18 | n-Octadecane (C18) | 0.612 | S | 0.0667 | 92 | 0.667 | 50 |
| SHC | C19 | n-Nonadecane (C19) | 0.564 | BS | 0.0667 | 85 | 0.667 | 50 |
| SHC | C20 | n-Eicosane (C20) | 0.586 | S | 0.0667 | 88 | 0.667 | 50 |
| SHC | C22 | n-Docosane (C22) | 0.591 | S | 0.0667 | 89 | 0.667 | 50 |
| SHC | C24 | n-Tetracosane (C24) | 0.598 | S | 0.0667 | 90 | 0.667 | 50 |
| SHC | C26 | n-Hexacosane (C26) | 0.572 | S | 0.0667 | 86 | 0.667 | 50 |
| SHC | C28 | n-Octacosane (C28) | 0.578 | S | 0.0667 | 87 | 0.667 | 50 |
| SHC | C30 | n-Triacontane (C30) | 0.582 | S | 0.0667 | 87 | 0.667 | 50 |
| SHC | C36 | n-Hexatriacontane (C36) | 0.517 | S | 0.0667 | 78 | 0.667 | 50 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 83 |
| d50-Tetracosane | 85 |

Project Name: GZA-642 Allens Ave
 Project Number:

Client ID Laboratory Control Sample Dup
 Lab ID TS061014LCSD02
 Matrix Soil
 Reference Method SHC
 Batch ID TS061014B02
 Date Collected N/A
 Date Received N/A
 Date Prepped 06/10/2013
 Date Analyzed 06/13/2014
 Sample Size (wet) 30
 % Solid 100.00
 File ID F9061114054.D
 Units mg/Kg
 Final Volume 2
 Dilution 1
 Reporting Limit 0.0667

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit | |
|-------|--------|-------------------------|--------|------|--------|-------------|-------------|-------------|-----|-----------|----|
| SHC | C9 | n-Nonane (C9) | 0.429 | S | 0.0667 | 64 | 0.667 | 50 | 130 | 4 | 30 |
| SHC | C10 | n-Decane (C10) | 0.472 | S | 0.0667 | 71 | 0.667 | 50 | 130 | 2 | 30 |
| SHC | C12 | n-Dodecane (C12) | 0.540 | S | 0.0667 | 81 | 0.667 | 50 | 130 | 0 | 30 |
| SHC | C14 | n-Tetradecane (C14) | 0.536 | S | 0.0667 | 80 | 0.667 | 50 | 130 | 1 | 30 |
| SHC | C16 | n-Hexadecane (C16) | 0.604 | S | 0.0667 | 91 | 0.667 | 50 | 130 | 2 | 30 |
| SHC | C18 | n-Octadecane (C18) | 0.622 | S | 0.0667 | 93 | 0.667 | 50 | 130 | 2 | 30 |
| SHC | C19 | n-Nonadecane (C19) | 0.574 | BS | 0.0667 | 86 | 0.667 | 50 | 130 | 2 | 30 |
| SHC | C20 | n-Eicosane (C20) | 0.598 | S | 0.0667 | 90 | 0.667 | 50 | 130 | 2 | 30 |
| SHC | C22 | n-Docosane (C22) | 0.604 | S | 0.0667 | 91 | 0.667 | 50 | 130 | 2 | 30 |
| SHC | C24 | n-Tetracosane (C24) | 0.610 | S | 0.0667 | 92 | 0.667 | 50 | 130 | 2 | 30 |
| SHC | C26 | n-Hexacosane (C26) | 0.584 | S | 0.0667 | 88 | 0.667 | 50 | 130 | 2 | 30 |
| SHC | C28 | n-Octacosane (C28) | 0.601 | S | 0.0667 | 90 | 0.667 | 50 | 130 | 4 | 30 |
| SHC | C30 | n-Triacontane (C30) | 0.594 | S | 0.0667 | 89 | 0.667 | 50 | 130 | 2 | 30 |
| SHC | C36 | n-Hexatriacontane (C36) | 0.530 | S | 0.0667 | 80 | 0.667 | 50 | 130 | 3 | 30 |

Surrogates (% Recovery)
 ortho-Terphenyl 83
 d50-Tetracosane 85

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | SS061014LCS01 |
| Matrix | Solid |
| Reference Method | SHC |
| Batch ID | SS061014B01 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/10/2014 |
| Date Analyzed | 06/11/2014 |
| Sample Size (wet) | 0.005 |
| % Solid | 100.00 |
| File ID | F9061114014.D |
| Units | mg/Kg |
| Final Volume | 1 |
| Dilution | 1 |
| Reporting Limit | 200 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | |
|-------|--------|-------------------------|--------|------|-------|-------------|-------------|-------------|-----|
| SHC | C9 | n-Nonane (C9) | 3540 | S | 200 | 88 | 4000 | 50 | 130 |
| SHC | C10 | n-Decane (C10) | 3510 | S | 200 | 88 | 4000 | 50 | 130 |
| SHC | C12 | n-Dodecane (C12) | 3870 | S | 200 | 97 | 4000 | 50 | 130 |
| SHC | C14 | n-Tetradecane (C14) | 3670 | S | 200 | 92 | 4000 | 50 | 130 |
| SHC | C16 | n-Hexadecane (C16) | 3980 | S | 200 | 100 | 4000 | 50 | 130 |
| SHC | C18 | n-Octadecane (C18) | 4050 | S | 200 | 101 | 4000 | 50 | 130 |
| SHC | C19 | n-Nonadecane (C19) | 3790 | S | 200 | 95 | 4000 | 50 | 130 |
| SHC | C20 | n-Eicosane (C20) | 3840 | S | 200 | 96 | 4000 | 50 | 130 |
| SHC | C22 | n-Docosane (C22) | 3860 | S | 200 | 96 | 4000 | 50 | 130 |
| SHC | C24 | n-Tetracosane (C24) | 3820 | S | 200 | 96 | 4000 | 50 | 130 |
| SHC | C26 | n-Hexacosane (C26) | 3720 | S | 200 | 93 | 4000 | 50 | 130 |
| SHC | C28 | n-Octacosane (C28) | 3770 | S | 200 | 94 | 4000 | 50 | 130 |
| SHC | C30 | n-Triacontane (C30) | 3810 | S | 200 | 95 | 4000 | 50 | 130 |
| SHC | C36 | n-Hexatriacontane (C36) | 3460 | S | 200 | 87 | 4000 | 50 | 130 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 94 |
| d50-Tetracosane | 96 |

Project Name: GZA-642 Allens Ave
 Project Number:

Client ID Laboratory Control Sample Dup
 Lab ID SS061014LCSD01
 Matrix Solid
 Reference Method SHC
 Batch ID SS061014B01
 Date Collected N/A
 Date Received N/A
 Date Prepped 06/10/2014
 Date Analyzed 06/11/2014
 Sample Size (wet) 0.005
 % Solid 100.00
 File ID F9061114012.D
 Units mg/Kg
 Final Volume 1
 Dilution 1
 Reporting Limit 200

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|-------------------------|--------|------|-------|-------------|-------------|-------------|-----|-----------|
| SHC | C9 | n-Nonane (C9) | 3630 S | 200 | 91 | 4000 | 50 | 130 | 3 | 30 |
| SHC | C10 | n-Decane (C10) | 3600 S | 200 | 90 | 4000 | 50 | 130 | 3 | 30 |
| SHC | C12 | n-Dodecane (C12) | 3960 S | 200 | 99 | 4000 | 50 | 130 | 2 | 30 |
| SHC | C14 | n-Tetradecane (C14) | 3760 S | 200 | 94 | 4000 | 50 | 130 | 3 | 30 |
| SHC | C16 | n-Hexadecane (C16) | 4060 S | 200 | 101 | 4000 | 50 | 130 | 2 | 30 |
| SHC | C18 | n-Octadecane (C18) | 4100 S | 200 | 102 | 4000 | 50 | 130 | 1 | 30 |
| SHC | C19 | n-Nonadecane (C19) | 3830 S | 200 | 96 | 4000 | 50 | 130 | 1 | 30 |
| SHC | C20 | n-Eicosane (C20) | 3880 S | 200 | 97 | 4000 | 50 | 130 | 1 | 30 |
| SHC | C22 | n-Docosane (C22) | 3900 S | 200 | 97 | 4000 | 50 | 130 | 1 | 30 |
| SHC | C24 | n-Tetracosane (C24) | 3860 S | 200 | 96 | 4000 | 50 | 130 | 1 | 30 |
| SHC | C26 | n-Hexacosane (C26) | 3760 S | 200 | 94 | 4000 | 50 | 130 | 1 | 30 |
| SHC | C28 | n-Octacosane (C28) | 3810 S | 200 | 95 | 4000 | 50 | 130 | 1 | 30 |
| SHC | C30 | n-Triacontane (C30) | 3850 S | 200 | 96 | 4000 | 50 | 130 | 1 | 30 |
| SHC | C36 | n-Hexatriacontane (C36) | 3490 S | 200 | 87 | 4000 | 50 | 130 | 1 | 30 |

Surrogates (% Recovery)
 ortho-Terphenyl 95
 d50-Tetracosane 97

Project Name: GZA-642 Allens Ave
 Project Number:

| | | |
|-------------------|---------------|---------------|
| Client ID | GZ-312D S-4 | GZ-312D S-4 |
| Lab ID | 1406002-01 | 1406002-01D |
| Matrix | Soil | Soil |
| Reference Method | SHC | SHC |
| Batch ID | TS060614B04 | TS060614B04 |
| Date Collected | 05/23/2014 | 05/23/2014 |
| Date Received | 05/30/2014 | 05/30/2014 |
| Date Prepped | 06/06/2014 | 06/06/2014 |
| Date Analyzed | 06/12/2014 | 06/12/2014 |
| Sample Size (wet) | 25.08 | 25.06 |
| % Solid | 85.19 | 85.19 |
| File ID | F9061114036.D | F9061114038.D |
| Units | mg/Kg | mg/Kg |
| Final Volume | 16 | 16 |
| Dilution | 1 | 1 |
| Reporting Limit | 24.7 | 24.7 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | RPD | RPD Limit |
|-------|--------|---------------------------------------|--------|------|--------|------|-----|-----------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 4270 | 24.7 | 3890 | 24.7 | 9 | 30 |

| | | |
|-------------------------|----|----|
| Surrogates (% Recovery) | | |
| ortho-Terphenyl | 80 | 78 |
| d50-Tetracosane | 83 | 82 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | | |
|-------------------|---------------|---------------|
| Client ID | GZ-304D S-5 | GZ-304D S-5 |
| Lab ID | 1406002-03 | 1406002-03D |
| Matrix | Solid | Solid |
| Reference Method | SHC | SHC |
| Batch ID | SS061014B01 | SS061014B01 |
| Date Collected | 05/28/2014 | 05/28/2014 |
| Date Received | 05/30/2014 | 05/30/2014 |
| Date Prepped | 06/10/2014 | 06/10/2014 |
| Date Analyzed | 06/12/2014 | 06/12/2014 |
| Sample Size (wet) | 0.00572 | 0.00546 |
| % Solid | 100.00 | 100.00 |
| File ID | F9061114018.D | F9061114020.D |
| Units | mg/Kg | mg/Kg |
| Final Volume | 1 | 1 |
| Dilution | 1 | 1 |
| Reporting Limit | 5770 | 6040 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | RPD | RPD Limit |
|-------|--------|---------------------------------------|--------|------|--------|------|-----|-----------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 631000 | 5770 | 692000 | 6040 | 9 | 30 |

| | | |
|-------------------------|-----|-----|
| Surrogates (% Recovery) | | |
| ortho-Terphenyl | 89 | 89 |
| d50-Tetracosane | 108 | 108 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | | | |
|-------------------|---------------|---------------|---------------|
| Client ID | GZ-312D S-4 | GZ-313D S-10 | GZ-304D S-5 |
| Lab ID | 1406002-01 | 1406002-02 | 1406002-03 |
| Matrix | Soil | Soil | Solid |
| Reference Method | SHC | SHC | SHC |
| Batch ID | TS060614B04 | TS060614B04 | SS061014B01 |
| Date Collected | 05/23/2014 | 05/27/2014 | 05/28/2014 |
| Date Received | 05/30/2014 | 05/30/2014 | 05/30/2014 |
| Date Prepped | 06/06/2014 | 06/06/2013 | 06/10/2014 |
| Date Analyzed | 06/12/2014 | 06/12/2014 | 06/12/2014 |
| Sample Size (wet) | 25.08 | 25.13 | 0.00572 |
| % Solid | 85.19 | 91.30 | 100.00 |
| File ID | F9061114036.D | F9061114040.D | F9061114018.D |
| Units | mg/Kg | mg/Kg | mg/Kg |
| Final Volume | 16 | 6.67 | 1 |
| Dilution | 1 | 1 | 1 |
| Reporting Limit | 24.7 | 9.59 | 5770 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|--------|------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 4270 | 24.7 | 1210 | 9.59 | 631000 | 5770 |

| | | | |
|-------------------------|----|----|-----|
| Surrogates (% Recovery) | | | |
| ortho-Terphenyl | 80 | 78 | 89 |
| d50-Tetracosane | 83 | 81 | 108 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | | | |
|-------------------|---------------|---------------|---------------|
| Client ID | GZ-304D S-7 | GZ-303D S-8 | GZ-302D S-10 |
| Lab ID | 1406002-04 | 1406002-05 | 1406002-06X |
| Matrix | Solid | Soil | Soil |
| Reference Method | SHC | SHC | SHC |
| Batch ID | SS061014B01 | TS060614B04 | TS061014B02 |
| Date Collected | 05/28/2014 | 05/28/2014 | 05/29/2014 |
| Date Received | 05/30/2014 | 05/30/2014 | 05/30/2014 |
| Date Prepped | 06/10/2014 | 06/06/2014 | 06/10/2013 |
| Date Analyzed | 06/12/2014 | 06/12/2014 | 06/13/2014 |
| Sample Size (wet) | 0.00521 | 30.3 | 30.08 |
| % Solid | 100.00 | 89.66 | 88.53 |
| File ID | F9061114022.D | F9061114042.D | F9061114056.D |
| Units | mg/Kg | mg/Kg | mg/Kg |
| Final Volume | 1 | 8 | 8.89 |
| Dilution | 1 | 1 | 1 |
| Reporting Limit | 6330 | 9.72 | 11.0 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|--------|------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 606000 | 6330 | 1730 | 9.72 | 1820 | 11.0 |

| | | | |
|-------------------------|-----|----|----|
| Surrogates (% Recovery) | | | |
| ortho-Terphenyl | 91 | 77 | 78 |
| d50-Tetracosane | 107 | 81 | 81 |

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
#: Value outside of QC Limits.
\$: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
x: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
\$: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------|
| Client ID | Method Blank |
| Lab ID | SS061814B02 |
| Matrix | Soil |
| Reference Method | SHC |
| Batch ID | SS061814B02 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/18/2014 |
| Date Analyzed | 06/22/2014 |
| Sample Size (wet) | 8 |
| % Solid | 100.00 |
| File ID | F1706201460.d |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 8.25 |

| Class | Abbrev | Analytes | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 2.72 J | 8.25 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 86 |
| d50-Tetracosane | 88 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|---------------------------|
| Client ID | Laboratory Control Sample |
| Lab ID | SS061814LCS02 |
| Matrix | Soil |
| Reference Method | SHC |
| Batch ID | SS061814B02 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/18/2014 |
| Date Analyzed | 06/22/2014 |
| Sample Size (wet) | 8 |
| % Solid | 100.00 |
| File ID | F1706201462.d |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.250 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|-------------------------|--------|------|-------|-------------|-------------|-------------|
| SHC | C9 | n-Nonane (C9) | 1.67 | S | 0.250 | 67 | 2.50 | 130 |
| SHC | C10 | n-Decane (C10) | 1.80 | S | 0.250 | 72 | 2.50 | 130 |
| SHC | C12 | n-Dodecane (C12) | 1.88 | S | 0.250 | 75 | 2.50 | 130 |
| SHC | C14 | n-Tetradecane (C14) | 2.07 | S | 0.250 | 83 | 2.50 | 130 |
| SHC | C16 | n-Hexadecane (C16) | 2.28 | S | 0.250 | 91 | 2.50 | 130 |
| SHC | C18 | n-Octadecane (C18) | 2.32 | S | 0.250 | 93 | 2.50 | 130 |
| SHC | C19 | n-Nonadecane (C19) | 2.16 | BS | 0.250 | 86 | 2.50 | 130 |
| SHC | C20 | n-Eicosane (C20) | 2.24 | S | 0.250 | 90 | 2.50 | 130 |
| SHC | C22 | n-Docosane (C22) | 2.24 | S | 0.250 | 90 | 2.50 | 130 |
| SHC | C24 | n-Tetracosane (C24) | 2.29 | S | 0.250 | 92 | 2.50 | 130 |
| SHC | C26 | n-Hexacosane (C26) | 2.19 | S | 0.250 | 87 | 2.50 | 130 |
| SHC | C28 | n-Octacosane (C28) | 2.20 | S | 0.250 | 88 | 2.50 | 130 |
| SHC | C30 | n-Triacontane (C30) | 2.22 | S | 0.250 | 89 | 2.50 | 130 |
| SHC | C36 | n-Hexatriacontane (C36) | 2.00 | S | 0.250 | 80 | 2.50 | 130 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 89 |
| d50-Tetracosane | 89 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|-------------------------------|
| Client ID | Laboratory Control Sample Dup |
| Lab ID | SS061814LCSD02 |
| Matrix | Soil |
| Reference Method | SHC |
| Batch ID | SS061814B02 |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | 06/18/2014 |
| Date Analyzed | 06/22/2014 |
| Sample Size (wet) | 8 |
| % Solid | 100.00 |
| File ID | F1706201464.d |
| Units | mg/Kg |
| Final Volume | 2 |
| Dilution | 1 |
| Reporting Limit | 0.250 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit | RPD | RPD Limit |
|-------|--------|-------------------------|--------|------|-------|-------------|-------------|-------------|-----|-----------|
| SHC | C9 | n-Nonane (C9) | 1.66 | S | 0.250 | 66 | 2.50 | 50 | 130 | 1 30 |
| SHC | C10 | n-Decane (C10) | 1.81 | S | 0.250 | 72 | 2.50 | 50 | 130 | 0 30 |
| SHC | C12 | n-Dodecane (C12) | 1.97 | S | 0.250 | 79 | 2.50 | 50 | 130 | 5 30 |
| SHC | C14 | n-Tetradecane (C14) | 2.11 | S | 0.250 | 84 | 2.50 | 50 | 130 | 2 30 |
| SHC | C16 | n-Hexadecane (C16) | 2.31 | S | 0.250 | 92 | 2.50 | 50 | 130 | 1 30 |
| SHC | C18 | n-Octadecane (C18) | 2.38 | S | 0.250 | 95 | 2.50 | 50 | 130 | 3 30 |
| SHC | C19 | n-Nonadecane (C19) | 2.22 | BS | 0.250 | 89 | 2.50 | 50 | 130 | 3 30 |
| SHC | C20 | n-Eicosane (C20) | 2.30 | S | 0.250 | 92 | 2.50 | 50 | 130 | 3 30 |
| SHC | C22 | n-Docosane (C22) | 2.31 | S | 0.250 | 92 | 2.50 | 50 | 130 | 3 30 |
| SHC | C24 | n-Tetracosane (C24) | 2.36 | S | 0.250 | 94 | 2.50 | 50 | 130 | 3 30 |
| SHC | C26 | n-Hexacosane (C26) | 2.25 | S | 0.250 | 90 | 2.50 | 50 | 130 | 3 30 |
| SHC | C28 | n-Octacosane (C28) | 2.27 | S | 0.250 | 91 | 2.50 | 50 | 130 | 3 30 |
| SHC | C30 | n-Triacontane (C30) | 2.29 | S | 0.250 | 92 | 2.50 | 50 | 130 | 3 30 |
| SHC | C36 | n-Hexatriacontane (C36) | 2.07 | S | 0.250 | 83 | 2.50 | 50 | 130 | 3 30 |

| | |
|-------------------------|----|
| Surrogates (% Recovery) | |
| ortho-Terphenyl | 89 |
| d50-Tetracosane | 90 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | | |
|-------------------|---------------|---------------|
| Client ID | GZ-307SR S-6 | GZ-307SR S-6 |
| Lab ID | 1406010-01 | 1406010-01D |
| Matrix | Soil | Soil |
| Reference Method | SHC | SHC |
| Batch ID | SS061814B02 | SS061814B02 |
| Date Collected | 06/03/2014 | 06/03/2014 |
| Date Received | 06/06/2014 | 06/06/2014 |
| Date Prepped | 06/18/2014 | 06/18/2014 |
| Date Analyzed | 06/22/2014 | 06/22/2014 |
| Sample Size (wet) | 15.34 | 15.32 |
| % Solid | 86.01 | 86.01 |
| File ID | F1706201466.d | F1706201468.d |
| Units | mg/Kg | mg/Kg |
| Final Volume | 8 | 8 |
| Dilution | 1 | 1 |
| Reporting Limit | 20.0 | 20.0 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | RPD | RPD Limit |
|-------|--------|---------------------------------------|--------|------|--------|------|-----|-----------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 8430 | 20.0 | 8290 | 20.0 | 2 | 30 |

| | | |
|-------------------------|----|----|
| Surrogates (% Recovery) | | |
| ortho-Terphenyl | 83 | 88 |
| d50-Tetracosane | 90 | 95 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | |
|-------------------|--------------------------|
| Client ID | Alaska North Slope Crude |
| Lab ID | TO062813ANC01 |
| Matrix | Oil |
| Reference Method | SHC |
| Batch ID | N/A |
| Date Collected | N/A |
| Date Received | N/A |
| Date Prepped | N/A |
| Date Analyzed | 06/28/2013 |
| Sample Size (wet) | 0.101 |
| % Solid | 100.00 |
| File ID | A009623.d |
| Units | mg/Kg |
| Final Volume | 10 |
| Dilution | 1 |
| Reporting Limit | 3270 |

| Class | Abbrev | Analytes | Result | SSRL | % Rec | Spike Conc. | Lower Limit | Upper Limit |
|-------|--------|---------------------------------------|--------|------|-------|-------------|-------------|-------------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 521000 | 3270 | 96 | 544000.00 | 65 | 135 |

Project Name: GZA-642 Allens Ave
 Project Number:

| | | | |
|-------------------|---------------|---------------|---------------|
| Client ID | GZ-307SR S-6 | GZ-308SR S-4 | GZ-310 S-5A |
| Lab ID | 1406010-01 | 1406010-02 | 1406010-03 |
| Matrix | Soil | Soil | Soil |
| Reference Method | SHC | SHC | SHC |
| Batch ID | SS061814B02 | SS061814B02 | SS061814B02 |
| Date Collected | 06/03/2014 | 06/04/2014 | 06/04/2014 |
| Date Received | 06/06/2014 | 06/06/2014 | 06/06/2014 |
| Date Prepped | 06/18/2014 | 06/18/2014 | 06/18/2014 |
| Date Analyzed | 06/22/2014 | 06/22/2014 | 06/22/2014 |
| Sample Size (wet) | 15.34 | 5 | 5.04 |
| % Solid | 86.01 | 85.19 | 47.56 |
| File ID | F1706201466.d | F1706201470.d | F1706201472.d |
| Units | mg/Kg | mg/Kg | mg/Kg |
| Final Volume | 8 | 4 | 20 |
| Dilution | 1 | 1 | 1 |
| Reporting Limit | 20.0 | 31.0 | 275 |

| Class | Abbrev | Analytes | Result | SSRL | Result | SSRL | Result | SSRL |
|-------|--------|---------------------------------------|--------|------|--------|------|--------|------|
| SHC | TPH | Total Petroleum Hydrocarbons (C9-C44) | 8430 | 20.0 | 8140 | 31.0 | 42700 | 275 |

| | | | |
|-------------------------|----|----|-----|
| Surrogates (% Recovery) | | | |
| ortho-Terphenyl | 83 | 90 | 86 |
| d50-Tetracosane | 90 | 93 | 117 |

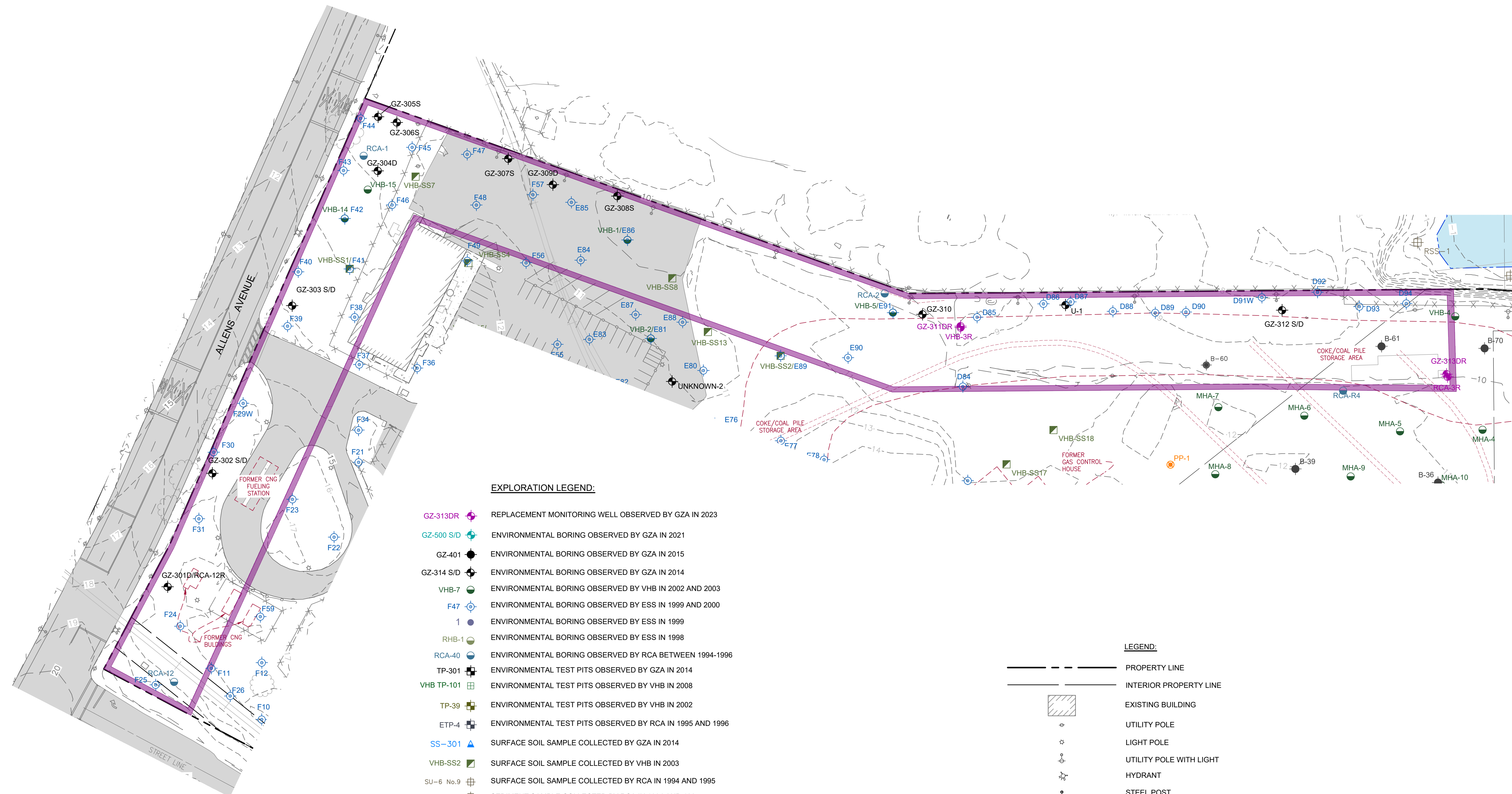
U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
#: Value outside of QC Limits.
\$: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
x: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
\$: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.



APPENDIX P

DATA GAP – NORTHERN AND WESTERN SITE PERIMETER

2023 - GZA GeoEnvironmental, Inc. - GZA-VA-EPA-33554.01-SK-FIGURES-CAD-DWG-33554.01 SITE INVESTIGATION REPORT - ADDENDUM DATA GAP DATA GAP - NORTHERN AND WESTERN SITE PERIMETER DWG 1 - JUNE 8, 2023 9:54 AM LISA THIBault



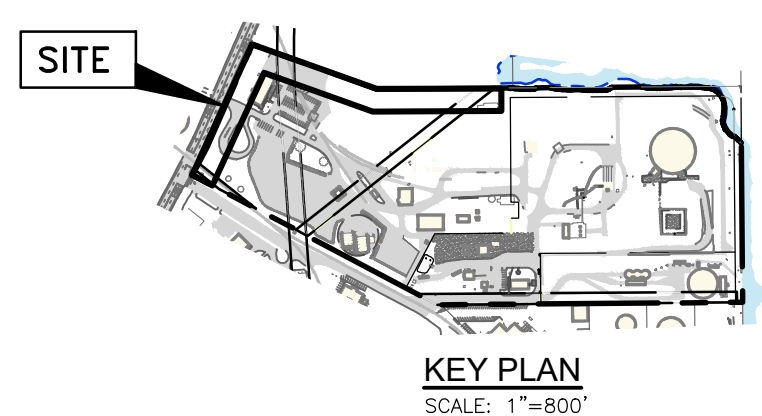
EXPLORATION LEGEND:

- GZ-313DR REPLACEMENT MONITORING WELL OBSERVED BY GZA IN 2023
- GZ-500 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021
- GZ-401 ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015
- GZ-314 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014
- VHB-7 ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003
- F47 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000
- 1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999
- RHB-1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998
- RCA-40 ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996
- TP-301 ENVIRONMENTAL TEST PITS OBSERVED BY GZA IN 2014
- VHB TP-101 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
- TP-39 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
- ETP-4 ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996
- SS-301 SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014
- VHB-SS2 SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003
- SU-6 No.9 SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995
- RSS-1 SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995
- CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
- RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
- CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
- ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
- PRV-1 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019
- B-211 GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016
- GZ-3 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016
- PP-2 GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015
- SB-01 GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WAI) IN 2015
- GZA-206 GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
- GZ-1 GEOTECHNICAL BORING OBSERVED BY GZA IN 2004
- SWBL13 GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995
- B-207 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973
- B-25 GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972
- PGC-8 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912
- W155 CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999

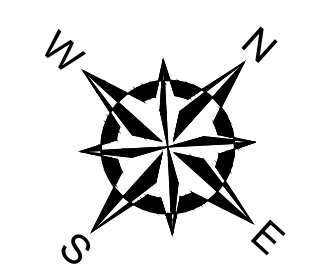
LEGEND:

- PROPERTY LINE
- INTERIOR PROPERTY LINE
- EXISTING BUILDING
- UTILITY POLE
- LIGHT POLE
- UTILITY POLE WITH LIGHT
- HYDRANT
- STEEL POST
- HISTORICAL STRUCTURE OR FEATURE
- EDGE OF WATER
- FENCE
- RAILROAD TRACKS
- EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- EXISTING PAVEMENT
- EXISTING CONCRETE
- APPROXIMATE LIMIT OF NORTHERN AND WESTERN SITE PERIMETER DATA GAP

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.



**DRAFT COPY
ISSUED FOR REVIEW**



THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

| | |
|---|---|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | |
| DATA GAP: EXPLORATION LOCATION PLAN NORTHERN AND WESTERN SITE PERIMETER | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | PREPARED FOR: Rhode Island Energy www.rienergy.com |
| PROJ MGR: SH DESIGNED BY: SH DATE: JUNE, 2023 | REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO.: 33554.01 |
| CHECKED BY: JJC SCALE: AS NOTED REVISION NO.: 0 | DRAWING P-1 SHEET NO. 1 OF 1 |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 11/16/71
 HOLE NO. 60
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

TO HALEY & Aldrich INC. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken At Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | Date | Time |
|-------------------------------------|-------------------|------------------------------|---------------|----------|------------------------------|------|
| At <u>9'</u> after <u>1/2</u> Hours | | Type Rods - <u>"AW"</u> | <u>S/S</u> | | START <u>11/16/71</u> | |
| At _____ after _____ Hours | <u>50' Casing</u> | Size I.D. <u>4" + 2 1/2"</u> | <u>1 3/8"</u> | | COMPLETE _____ | |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT | TOTAL MRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>Cortez</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|------------|-----------------------|-------------------------|----------------|-------------------------|----------|----------|-----------------------------|---------------------|---|------------|------------|------------|------------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Ret. | |
| | | <u>Probe 5'</u> | | | | | | | | | | | |
| <u>11</u> | | <u>5'-6'6"</u> | <u>D</u> | <u>3</u> | <u>2</u> | <u>3</u> | <u>Wet Loose</u> | | <u>Black Cinders Med To Fine SAND, Fill</u> | <u>1</u> | <u>18'</u> | <u>10"</u> | |
| <u>34</u> | | | | | | | | | <u>Trace of Coarse SAND, Oil Soaked</u> | | | | |
| <u>21</u> | | | | | | | | | | | | | |
| <u>23</u> | | | | | | | | | | | | | |
| <u>24</u> | | | | | | | | | | | | | |
| <u>11</u> | | <u>10'-11'6"</u> | <u>D</u> | <u>5</u> | <u>5</u> | <u>4</u> | <u>" "</u> | | | <u>2</u> | <u>10'</u> | <u>8"</u> | |
| <u>10</u> | | | | | | | | | | | | | |
| <u>9</u> | | | | | | | | <u>13'</u> | | | | | |
| <u>3</u> | | | | | | | | | | | | | |
| <u>W/H</u> | | | | | | | | | <u>Lost Sample</u> | | | | |
| <u>4</u> | | <u>15'-16'6"</u> | <u>D</u> | <u>1</u> | <u>1</u> | <u>1</u> | | <u>16'</u> | <u>Gray Fine To Med. SAND, in Wash - Fill -</u> | | | | |
| <u>6</u> | | | | | | | | | | | | | |
| <u>5</u> | | <u>16'6"-20'</u> | <u>D</u> | <u>1</u> | <u>2</u> | <u>1</u> | <u>Wet Soft</u> | | <u>Gray Brown Org. Silt, with Fine Sand</u> | <u>3</u> | <u>40'</u> | <u>40"</u> | |
| <u>6</u> | | | <u>1</u> | <u>3</u> | <u>3</u> | <u>3</u> | | | | | | | |
| <u>4</u> | | | | | | | | | | | | | |
| <u>22</u> | | <u>20'-22'</u> | <u>UT</u> | <u>Press</u> | | | | | | <u>UT-</u> | <u>1</u> | <u>24'</u> | <u>10"</u> |
| <u>17</u> | | | | | | | | | | | | | |
| <u>17</u> | | <u>22'6"-24'</u> | <u>6"</u> | <u>UP Press</u> | | | | | | <u>UP-</u> | <u>1</u> | <u>24'</u> | <u>80"</u> |
| <u>18</u> | | | | | | | | | | | | | |
| <u>22</u> | | <u>24'6"-26'</u> | <u>D</u> | <u>1</u> | <u>1</u> | <u>1</u> | | | <u>Gray Org. SILT, Traces to Little Peat</u> | <u>4</u> | <u>15'</u> | <u>12"</u> | |
| <u>29</u> | | | | | | | | | | | | | |
| <u>20</u> | | <u>27'-29'</u> | <u>UP</u> | <u>Pressed</u> | | | | | | <u>UP-</u> | <u>2</u> | <u>14'</u> | <u>20"</u> |
| <u>21</u> | | | | | | | | | | | | | |
| <u>23</u> | | <u>29'-30'6"</u> | <u>D</u> | <u>2</u> | <u>2</u> | <u>2</u> | | | | <u>5</u> | <u>18'</u> | <u>16"</u> | |
| <u>24</u> | | | | | | | | | | | | | |
| <u>37</u> | | | | | | | | | | | | | |
| <u>30</u> | | | | | | | | | | | | | |
| <u>27</u> | | | | | | | | | | | | | |
| <u>41</u> | | | | | | | | | | | | | |
| <u>33</u> | | | | | | | | <u>35'</u> | | | | | |
| <u>41</u> | | <u>35'-36'6"</u> | <u>D</u> | <u>8</u> | <u>7</u> | <u>9</u> | <u>Wet</u> | | <u>Gray Coarse to Med. SAND, Fine to Med. Gravel, Little Silt</u> | <u>6</u> | <u>18'</u> | <u>12"</u> | |
| <u>32</u> | | | | | | | | | | | | | |
| <u>33</u> | | | | | | | | | | | | | |
| <u>47</u> | | | | | | | | | | | | | |
| <u>106</u> | | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY
 Earth Boring 52'6"
 Rock Coring _____
 Samples 10

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 60

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|-------------------|---------|-----------|------------------------------|-------|
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | Hammer Wt. _____ | _____ | BIT | TOTAL HRS. _____ | _____ |
| | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN <u>Cortez</u> | _____ |
| | | | | | INSPECTOR _____ | _____ |
| | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|-------|-----------|------------------------------|---------------------|---|--------|------|-----|
| | | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen. | Re. |
| 28 | | 40'-41'6" | D | 18 | 18 | 15 | Wet Dense | | Gray Med. to Fine Sand, Fine gravel, Little Silt, Cobbles | 7 | 18" | 11 |
| 33 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 30 | | 45'-46'6" | D | 9 | 11 | 13 | Moist Dense | | | 8 | 18" | 11 |
| 31 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| | | 49'-50'6" | D | 13 | 10 | 9 | | | | 9 | 18" | 8 |
| | | | | | | | | | | | | |
| | | 50'6"-52'6" | D | 8 | 8 | 7 | | 52'6" | | 10 | 24" | 8 |
| | | | | | | | | | | | | |
| | | | | | | | | | Bottom of Boring at 52'6" | | | |
| | | | | | | | | | 0'-40' Used 4" Casing | | | |
| | | | | | | | | | 40'-50' 2½" Casing | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwall | Proportions Used Trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| TOWN PRESS - EAST PROV. | | | HOLE NO. <u>60</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 11/15/71
 HOLE NO. 61
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.5'

TO Haley & Aldrich Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence, Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|------------------------|---------------|-----------|-----------------------------|------|
| At <u>6'-8'</u> | after _____ | Hours | Type <u>RODS-"AW"</u> | <u>S/S</u> | _____ | START <u>11/15/71</u> | a.m. |
| At _____ | after _____ | Hours | Size I.D. <u>H+BW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>11/17/71</u> | p.m. |
| | | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT | TOTAL HRS. _____ | |
| | | | Hammer Fall <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>Gomes</u> | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|-----------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 7 | | 0'-1'6" | D | 4 | 5 | 6 | Moist Loose | | Black Cinders & Ashes, Fill | 1 | 18' | 11" |
| 7 | | | | | | | | 3' | | | | |
| 8 | | | | | | | | | | | | |
| 5 | | | | | | | Moist | | Brown Peat Mixed with Sand, Cinders, Fill | | | |
| 6 | | | | | | | | | | | | |
| 3 | | 5'-6'6" | D | 2 | 1 | 1 | | 8' | | 2 | 18' | 9" |
| 4 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | | | Loose Wet | | Fine to Med. SAND, Few Small Gravel, Trace Silt | | | |
| 7 | | | | | | | | | | | | |
| 9 | | 10'-11'6" | D | 8 | 6 | 4 | | | | 3 | 18' | 6" |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | -Fill- | | | |
| 14 | | | | | | | | | | | | |
| 27 | | 15'-16' | D | 10 | 4 | | | 16' | | 4 | 18' | 5" |
| 13 | | 16'-16'6" | D | 3 | | | | | Organic Silt | 4A | 6" | 4" |
| 13 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 20 | | 19'-21' | S | | | | | 21' | Pressed 2" Shelby No Rec. | | | |
| 26 | | | | | | | | | Med. Comp. Gr. Gravel, Med. to Fine Sand, Silt, Shells | 5 | 24' | 10" |
| 32 | | 21'-23' | D | 13 | 19 | 10 | Moist M.D. | | | | | |
| 27 | | | | 14 | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 90 | | 25'-26'6" | D | 18 | 14 | 10 | | | | 6 | 18' | 3" |
| 121 | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 20 | | 30'-31'6" | D | 30 | 28 | 24 | | | Boulders Fragments | 7 | 18' | 6" |
| 62 | | 31'6"-33' | D | 17 | 21 | 29 | | | Brown Gravel, Coarse to Fine Sand, Silt | 8 | 18' | 10" |
| 80 | | | | | | | | | | | | |
| 76 | | | | | | | | | | | | |
| 104 | | | | | | | | | | | | |
| 42 | | 35'-36'6" | D | 20 | 27 | 33 | | | | 9 | 18' | 10" |
| 63 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |

GROUND SURFACE TO 46'6"

USED 30" I.D. "CASING: THEN 45'-15"

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 30'6"
 Rock Coring 0
 Samples 11

HOLE NO. _____

| RESOURCE CONTROLS | | | | | TEST BORING LOG | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------------------|-------------|----------------|--------------------|--|---|--------------------------------------|-------------------------------------|--|--|--|--|--------|---------|-------|-----|-------------|------------|----|--------|-------------|----------|----------|--------------|--------|--------|
| PROJECT: Providence Gas Company PROJECT NO.: A2000 048 LOCATION: 642 Allens Avenue, Providence, R.I. DRILLING CO.: Guild Drilling Company DRILLED BY: J.R. INSPECTED BY: Daniel Lanier & Brian Koch | | | | | BORING NO. RCA-1 (BD-103) PAGE 1 OF 1 DATE STARTED: 6/8/94 DATE FINISHED: SURFACE ELEVATION: | | | | | | | | | | | | | | | | | | | | | |
| GROUNDWATER OBSERVATIONS <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>DEPTH</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td></td> <td>N/A</td> </tr> </tbody> </table> | | | | | DEPTH | STABILIZATION TIME | | N/A | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>CASING</th> <th>SAMPLER</th> </tr> </thead> <tbody> <tr> <td>TYPE:</td> <td>HSA</td> <td>Split Spoon</td> </tr> <tr> <td>SIZE I.D.:</td> <td>6"</td> <td>1-3/8"</td> </tr> <tr> <td>HAMMER WT.:</td> <td>300 lbs.</td> <td>140 lbs.</td> </tr> <tr> <td>HAMMER FALL:</td> <td>30 in.</td> <td>30 in.</td> </tr> </tbody> </table> | | | | CASING | SAMPLER | TYPE: | HSA | Split Spoon | SIZE I.D.: | 6" | 1-3/8" | HAMMER WT.: | 300 lbs. | 140 lbs. | HAMMER FALL: | 30 in. | 30 in. |
| DEPTH | STABILIZATION TIME | | | | | | | | | | | | | | | | | | | | | | | | | |
| | N/A | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CASING | SAMPLER | | | | | | | | | | | | | | | | | | | | | | | | |
| TYPE: | HSA | Split Spoon | | | | | | | | | | | | | | | | | | | | | | | | |
| SIZE I.D.: | 6" | 1-3/8" | | | | | | | | | | | | | | | | | | | | | | | | |
| HAMMER WT.: | 300 lbs. | 140 lbs. | | | | | | | | | | | | | | | | | | | | | | | | |
| HAMMER FALL: | 30 in. | 30 in. | | | | | | | | | | | | | | | | | | | | | | | | |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) | FIELD TEST DATA PID - 10.2 eV (ppm) | | | | | | | | | | | | | | | | | | |
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | | | | | | | | | | | | | | | | | | | |
| 5' | 4.5 -6.0 | SS-1 | 20% | NA | | Grass | | | | | | | | | | | | | | | | | | | | |
| | 6-7 | S-1 | | (From Casing) | | dry, black, fine SANDY FILL, cohesive asphaltic odor | 101 | | | | | | | | | | | | | | | | | | | |
| 10' | 7-9 | S-2 | | (From Casing) | | moist, black, medium SANDY FILL, with brick, asphaltic odor | 577 | | | | | | | | | | | | | | | | | | | |
| | 9-11 | SS-2 | 100% | NA | | saturated, black, coarse to medium SANDY FILL, asphaltic odor | 64 | | | | | | | | | | | | | | | | | | | |
| | 11 -14 | S-3 | | (From Casing) | | SAME, with sheen | 114 | | | | | | | | | | | | | | | | | | | |
| 15' | 14 -16 | SS-3 | 100% | 3-4 4-3 | | SAME, cohesives, tarry texture | | | | | | | | | | | | | | | | | | | | |
| | | | | | | saturated, black, MEDIUM SAND trace coarse sand | 61 | | | | | | | | | | | | | | | | | | | |
| 20' | | | | | | Bottom of exploration to 17.5' Concrete seal | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 17.5' to 16.5' Bentonite seal | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 16.5' to 6.5' Screen | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 6.5' to 0.5' Riser | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 16.5' to 6.5' Filter pack | | | | | | | | | | | | | | | | | | | | |
| 25' | | | | | | 5.5' to 4.5' Bentonite seal | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 4.5' to 1.5' Grout | | | | | | | | | | | | | | | | | | | | |
| 30' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENERAL REMARKS: 10' 0.010"-slot wire-wrap stainless steel screen (2" diameter) 6' 2" stainless steel riser 5-3/8" sump at bottom, threaded plug D&W / core Boring / Casing Size 6" roadbox at grade | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2000DRL.LOG | | | | | | | | | | | | | | | | | | | | | | | | | | |

NOT MENTIONED
IN VHB
SIR

| RESOURCE CONTROLS | | | | | TEST BORING LOG | | | |
|---|--------------------------------|--------------------|----------------|--------------------|--|---|---|-------------------------------------|
| PROJECT: Providence Gas Company | | | | | BORING NO. RCA-2 | | | |
| PROJECT NO.: A2000 | | | | | PAGE 1 OF 1 | | | |
| LOCATION: 542 Allens Avenue, Providence, R.I. | | | | | DATE STARTED: 9/8/94 | | | |
| DRILLING CO.: American Drilling, Inc. | | | | | DATE FINISHED: 9/8/94 | | | |
| DRILLED BY: Jim Campbell | | | | | SURFACE ELEVATION: | | | |
| INSPECTED BY: Daniel Lanier | | | | | | | | |
| GROUNDWATER OBSERVATIONS | | | | | CASING SAMPLER | | | |
| DEPTH | | STABILIZATION TIME | | | TYPE: | | | |
| | | N/A | | | Split Spoon | | | |
| | | | | | SIZE I.D.: | | | |
| | | | | | 1-3/8" | | | |
| | | | | | HAMMER WT.: | | | |
| | | | | | 140 lbs. | | | |
| | | | | | HAMMER FALL: | | | |
| | | | | | 30 in. | | | |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) | FIELD TEST DATA PID - 10.2 eV (ppm) |
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | |
| 5' | 2-4 | SS-1 | 40% | 3-4 | | SAND moist, brown medium to fine SAND and black, cohesive, tarry soil some COKE fill | 134 | |
| | | | | 5-5 | | | | |
| | 4-6 | SS-2 | 20% | 7-7 | | | | |
| 10' | | | 5% | 5-9 | | | SAME, trace silt | 125 |
| | 6-8 | SS-3 | | 5-4 | | | | |
| | | | 10% | 4-3 | | | | |
| | 8-10 | SS-4 | | weight of hammer | | | | |
| 15' | 10-12 | SS-5 | 5% | 1 | | | saturated, black, medium to fine SAND some silt, oily no recovery wash | 132 |
| | | | | | | | | |
| | 12-14 | SS-6 | | 1-1 | | | | |
| 20' | 14-16 | SS-7 | 85% | 2-2 | A: saturated, black, fine SAND, some silt little medium sand B: saturated, olive, fine SAND over silt saturated, gray, medium SAND, petrol odor | 197 40.1 113 | | |
| | | | 100% | 2-3 | | | | |
| | | | 70% | 2-3 | | | | |
| 25' | 16-18 | SS-8 | | 4-3 | SAME sat., dark grey, med. to fine SAND, some silt dark, olive, SILT, trace clay | 89.4 10.7 | | |
| | | | 30% | 2-6 | | | | |
| | 18-20 | SS-9 | | 1-1 | | | | |
| 30' | 20-22 | S-10 | 100% | 1-1 | SAME Bottom of exploration at 22' | 4.2 | | |
| | | | | 3-2 | | | | |
| | | | 100% | 1-2 | | | | |
| GENERAL REMARKS: 0.020"-slot EFG screen 8-1/2" borehole #2 silica sand pack HSA / boring 2'-10" standpipe | | | | | | | | |

EOIPROV0003857

| RESOURCE CONTROLS | | | | | TEST BORING LOG | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------------------|-------------|----------------|--------------------|---|--|--|-------------------------------------|--|--|--|--|---|--|--|--|--------|---------|-------|-------------|------------|--------|-------------|----------|--------------|--------|
| PROJECT: Providence Gas Company | | | | | BORING NO. RCA-12 | | | | | | | | | | | | | | | | | | | | | |
| PROJECT NO.: A2000 | | | | | PAGE 1 OF 1 | | | | | | | | | | | | | | | | | | | | | |
| LOCATION: 642 Allens Avenue, Providence, R.I. | | | | | DATE STARTED: 9/13/94 | | | | | | | | | | | | | | | | | | | | | |
| DRILLING CO.: American Drilling, Inc. | | | | | DATE FINISHED: 9/13/94 | | | | | | | | | | | | | | | | | | | | | |
| DRILLED BY: Jim Campbell | | | | | SURFACE ELEVATION: | | | | | | | | | | | | | | | | | | | | | |
| INSPECTED BY: Daniel Lanier | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GROUNDWATER OBSERVATIONS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">DEPTH</th> <th style="width: 80%;">STABILIZATION TIME</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> | | | | | DEPTH | STABILIZATION TIME | | | | | | | <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">CASING</th> <th style="width: 50%;">SAMPLER</th> </tr> </thead> <tbody> <tr> <td>TYPE:</td> <td>Split Spoon</td> </tr> <tr> <td>SIZE I.D.:</td> <td>1-3/8"</td> </tr> <tr> <td>HAMMER WT.:</td> <td>140 lbs.</td> </tr> <tr> <td>HAMMER FALL:</td> <td>30 in.</td> </tr> </tbody> </table> | | | | CASING | SAMPLER | TYPE: | Split Spoon | SIZE I.D.: | 1-3/8" | HAMMER WT.: | 140 lbs. | HAMMER FALL: | 30 in. |
| DEPTH | STABILIZATION TIME | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CASING | SAMPLER | | | | | | | | | | | | | | | | | | | | | | | | | |
| TYPE: | Split Spoon | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIZE I.D.: | 1-3/8" | | | | | | | | | | | | | | | | | | | | | | | | | |
| HAMMER WT.: | 140 lbs. | | | | | | | | | | | | | | | | | | | | | | | | | |
| HAMMER FALL: | 30 in. | | | | | | | | | | | | | | | | | | | | | | | | | |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) GRASS | FIELD TEST DATA PID - 10.2 eV (ppm) | | | | | | | | | | | | | | | | | | |
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | | | | | | | | | | | | | | | | | | | |
| 5' | 1' | S-1 | NA | Grab | | dry, dark brown, medium to fine SAND (fill) | 8.1 | | | | | | | | | | | | | | | | | | | |
| | 2-4 | SS-1 | 30% | 2-3-3-4 | | damp, brown, medium SAND, some fine sand trace gravel | 6.1 | | | | | | | | | | | | | | | | | | | |
| | 4-6 | SS-2 | 35% | 3-2-2-3 | | damp, brown, medium to fine SAND, trace coarse sand | 5.7 | | | | | | | | | | | | | | | | | | | |
| 10' | 6-8 | SS-3 | 10% | 3-5-4-4 | | SAME | 10.7 | | | | | | | | | | | | | | | | | | | |
| | 8-10 | SS-4 | 45% | 4-3-2-2 | | moist, tan, fine SAND, trace coarse to medium sand | 9.7 | | | | | | | | | | | | | | | | | | | |
| | 10-12 | SS-5 | 35% | 2-1-2-2 | | saturated, olive, medium to fine SAND, trace silt | 5.8 | | | | | | | | | | | | | | | | | | | |
| 15' | 12-14 | SS-6 | 90% | 2-1-1-1 | | SAME | 4.2 | | | | | | | | | | | | | | | | | | | |
| | 14-16 | SS-7 | 70% | 4-3-3-3 | | saturated, olive, medium SAND, some fine sand trace coarse sand and silt | 6.4 | | | | | | | | | | | | | | | | | | | |
| | 16-18 | SS-8 | 100% | 2-2-1-1 | olive, fine SAND, some medium sand, little sand | 7.7 | | | | | | | | | | | | | | | | | | | | |
| 20' | | | | | Bottom of exploration at 18' | | | | | | | | | | | | | | | | | | | | | |
| 25' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENERAL REMARKS: | | | | | 10' 0.020"-slot EFG screen 8-1/2" borehole HSA/ boring #2 silica sand pack 2'-10" standpipe | | | | | | | | | | | | | | | | | | | | | |
| 2000DRL.LOG | | | | | | | | | | | | | | | | | | | | | | | | | | |

EOIPROV0003202

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: D84

Date: 1/25/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 6.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1130 | 0.0 | (0-19") F/M brown sand with light gravel and SO black cinders; dry; no odor. (19-22") F light brown sand with LI gravel; dry; no odor. (22-24") dark brown sand with black cinders; dry; no odor. |
| B | 2-4 | 40/48 | | 0.0 | (32-34") black cinders and cinder ash. (34-57") F brown sand with SO gravel; dry; no odor. (57-72") F dark brown sand and gravel with TR silt and TR black cinders 57-72"; wet at 72"; light odor. |
| C | 4-6 | | 1150 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: D85

Date: 1/25/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.5'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1200 | 0.0 | (0-24") F/M brown sand and gravel; TR silt at 19-24"; dry; no odor; |
| B | 2-4 | 41/48 | | 0.0 | (31-47") F/M black stained cinder ash with M/large black cinders; dry; no odor. (47-72") F/M brown/gray stained sand with SO gravel with LI cinders and TR silt; saturated with water at 66"; light petroleum odor |
| C | 4-6 | | 1220 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



1/2 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
 642 Allens Avenue, Providence, RI
 ESS Job No: P151-002
 Driller.: Environmental Drilling, Inc.
 Well Diameter: N/A
 Drilling Method: Geoprobe
 Sample Method: 4' Acetate Sampler

Boring No.: D86
 Date: 2/2/00
 Within 100' of Water: No
 Instrument: Thermo Environmental
 Instruments, Inc., Model 580B OVM
 Boring Depth: 6.0'
 Depth to Water: 4.0'
 Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 18/24 | 1450 | 0.0 | (6-17") F/M brown sand and gravel; dry; no odor. (17-24") M/large dull black cinders with SO dense cinder ash; dry; no odor. |
| B | 2-4 | 34/48 | 1505 | 0.0 | (38-48") F/C brown/black stained sand with SO M/large black cinders and SO cinder ash; damp; light odor. (48-72") F gray/black stained silt saturated with water at 45"; heavy odor; blue/green sheen from 48-72". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| | | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: D87
Date: 1/25/00
Within 100' of Water: No
Instrument: Thermo Environmen.
Instruments, Inc., Model 580B OVA
Boring Depth: 6.0'
Depth to Water: 5.0'
Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 0955 | 0.0 | (0-14") F/M dark brown sand and gravel; dry; no odor. (14-24") F/M brown sand and gravel; dry; light odor. |
| B | 2-4 | 33/48 | | 1.0 | (39-43") F/M light brown sand with SO gravel; dry; no odor. (43-60") F black stained sand with M/large black cinders; dry, petroleum odor present. (60-72") F black stained sand and silt; SO gray - clay like soils; saturated with water at 60"; very heavy petroleum odor. Separate phase petroleum observed in sample. |
| C | 4-6 | | 1005 | 16.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



72 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: D88 |
| ESS Job No: P151-002 | Date: 1/25/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 4.0' |
| | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 0920 | 0.0 | (0-24") F/M light brown sand with LI wood chips in sample and SO gravel; dry; no odor. |
| B | 2-4 | 40/48 | 0935 | 0.0 | (32-49") F/M brown/dark brown sand with LI gravel and SO black stained sand with SO M black cinders; dry; light odor. (49-72") F/M dark brown sand with SO gravel and SO black cinders; saturated with water; odor present |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------------------|------------------------|-------------------|--|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: D89
Date: 1/28/00
Within 100' of Water: No
Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Boring Depth: 6.0'
Depth to Water: 3.5'
Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1120 | 0.0 | (0-7") F/M brown sand with LI orange sand; dry; no odor. (7-15") pulverized stone/gravel. (15-24") F/M brown sand and gravel; dry; no odor. |
| B | 2-4 | 48/48 | 1138 | 0.0 | (24-28") F/M dark brown sand with light gravel; dry; no odor. (28-35") yellow colored stone; dry; no odor. (35-40") F black cinder ash; dry; no odor. (40-72") F brown sand and silt with TR gravel; saturated with water; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: D90

Date: 1/28/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 4.25'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1150 | 0.0 | (0-4") gravel and pulverized stone. (4-10") F light brown sand with SO gravel; dry; no odor. (10-24") F/M brown/dark brown sand and gravel with TR dull black cinders; dry; no odor. |
| B | 2-4 | 45/48 | 1210 | 6.1 | (27-43") F/M brown sand and gravel; dry; no odor. (43-55") loose black cinder ash with dull M/large black cinders; damp; odor present. (55-61") F/M dense cinder ash and black cinders; saturated with water; heavy odor. (61-72") F gray/dark brown stained sand and silt; saturated with water; heavy odor. |
| C | 4-6 | | | 38.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

PROPORTIONS USED

TRACE (TR) 0-10%
LITTLE (LJ) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS


F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

Well Construction

DEPTH INTERVALS

A = 0-24 in. G = 144-168 in.
B = 24-48 in. H = 168-192 in.
C = 48-72 in. I = 192-216 in.
D = 72-96 in. J = 216-240 in.
E = 96-120 in. K = 240-264 in.
F = 120-144 in. L = 264-288 in.

TEST BORING LOG

| | | |
|---|---|--|
|  <p>272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731</p> | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: D91 |
| | ESS Job No: P151-002 | Date: 1/28/00 |
| | Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| | Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| | Drilling Method: Geoprobe | Boring Depth: 6.0' |
| | Sample Method: 4' Acetate Sampler | Depth to Water: 3.0' |
| | Logged By: Daryll Issa | |

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1330 | 0.0 | (0-6") F/C (mostly F/M) light brown sand with SO small pieces of gravel; dry; no odor. (6-11") F/M brown sand with SO small pieces of gravel; dry; no odor. (11-17") F/M brown/light brown sand; dry; no odor. (17-24") F/M black stained sand with small black cinders; dry; no odor. |
| B | 2-4 | 41/48 | 1345 | 9.2 | |
| C | 4-6 | | | 85.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|---|-------------------------------------|
| TRACE (TR) 0-10% | F = FINE | (+1.0-1.0') PVC Solid Riser (1.0-6.0') PVC Screen One inch sump at 6.0' | A = 0-24 in. G = 144-168 in. |
| LITTLE (LJ) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | F = 120-144 in. L = 264-288 in. | |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: D92

Date: 1/28/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 3.25'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|---|
| A | 0-2 | 23/24 | 1400 | 0.0 | (1-5") topsoil. (5-14") F/M brown sand and gravel; dry; no odor. (14-24") F/M brown sand with TR gravel and SO cinder ash; with SO M/large black cinders; dry; no odor. |
| B | 2-4 | 31/48 | 1410 | 8.2 | (41-46") F/M gray/brown sand with SO gravel; wet; odor present. (46-58") F/M gray/brown stained sand with TR silt and SO gravel; saturated with water; heavy odor. (58-72") F gray/brown sand and silt; saturated with water; heavy petroleum odor. |
| C | 4-6 | | | 46.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (L) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: D93

Date: 1/28/00

Within 100' of Water: Yes

Instrument: Thermo Environmen.
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 4.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1440 | 0.0 | (0-5") F/C yellow/light tan sand with LI gravel; dry; no odor. (5-14") small/M black cinders with SO cinder ash; dry; no odor. (14-24") small/M black and orange cinders with SO cinder ash; dry; no odor. |
| B | 2-4 | 35/48 | | 0.0 | (37-48") M/large black cinders with SO cinder ash; dry; no odor. (48-56") F/M gray/brown sand with LI gravel; wet; no odor. (56-72") F/C brown/gray sand with LI gravel; saturated with water at 60"; no odor. |
| C | 4-6 | | 1455 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

PROPORTIONS USED

TRACE (TR) 0-10%
LITTLE (LI) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

Well Construction

DEPTH INTERVALS

A = 0-24 in. G = 144-168 in.
B = 24-48 in. H = 168-192 in.
C = 48-72 in. I = 192-216 in.
D = 72-96 in. J = 216-240 in.
E = 96-120 in. K = 240-264 in.
F = 120-144 in. L = 264-288 in.

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: D94

Date: 1/28/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Darryl Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1425 | 0.0 | (0-6") F/M brown/dark brown sand with SO gravel; dry; no odor. (6-11") F/M light brown sand with LI gravel; dry; no odor. (11-24") small/large black shiny/dull cinders with SO cinder ash; dry; faint odor. |
| B | 2-4 | 42/48 | | 0.0 | (30-33") black cinders and cinder ash; dry; no odor. (33-72") F light brown sand with LI gravel; wet at 60-72"; no odor. |
| C | 4-6 | | 1440 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

| | |
|---|---|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E84 |
| ESS Job No: P151-002 | Date: 1/19/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmen. Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 5.0' |
| | Logged By: Nicole Murry |

| Depth intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1400 | 0.0 | (0-6") asphalt with M/large concrete bits. (6-12") M brown silty sand with SO M/large rounded stone. (12-24") F/M black cinder ash with SO orange cinders; F coal bits throughout. |
| B | 2-4 | 36/48 | 1410 | 21.0 | (36-40") F/M black cinder ash with SO orange cinders; F coal bits throughout. (40-48") F/M orange sand; SO M stone throughout. (48-72") M/C black cinder ash with SO coal throughout; F cinder ash at 60-72"; wet at 60". Sheen observed. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LJ) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E85

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6'

Depth to Water: 4.5'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1345 | 0.0 | (0-7") pulverized stone/concrete. (7-15") F/M black cinder ash; dry; no odor. (15-24") F/M brown/dark brown sand with SO cinder ash and TR shiny black cinders; dry; no odor. |
| B | 2-4 | 46/48 | 1405 | 15.0 | (26-50") F/M brown/dark brown sand and black cinder ash with shiny and dull black cinders with TR gravel; dry; odor present. (50-59") F/M black cinder ash and small black cinders; wet; heavy odor. (59-72") F/M black cinders and cinder ash with SO silt; saturated with water; heavy, heavy odor. |
| C | 4-6 | | | 26.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|--|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | (0-3.0') PVC Solid Riser (3.0-8.0') PVC Screen One inch sump at 8.0' | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LJ) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | F = 120-144 in. | L = 264-288 in. | |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731


| | |
|---|---|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E86 |
| ESS Job No: P151-002 | Date: 1/17/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environment Instruments, Inc., Model 580B OVI |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 4.5' |
| | Logged By: Nicole Murry |

| Depth Intervals | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-----------------|---------------------|----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1325 | 0.0 | (0-2") asphalt and concrete bits. (2-12") M brown sand with M/large gravel and SO black cinder ash throughout. (12-24") F/M black cinder ash with M cinder ash/cinders/coal bits 20-24". |
| B | 2-4 | 36/48 | 1340 | 36.0 | (36-42") very fine loose black cinder ash with SO M/C white porous cinders. (42-48") C orange and black cinder, (48-56") very fine black cinder and bits of coal; wet at 52". (56-72") very C black cinder ash/black cinders/black sand; petroleum saturated; heavy odor. Sheen present. |
| C | 4-6 | | | | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (L) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG

|  272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | | | | | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | | | Boring No.: E90 | |
|---|---------------------|----------------------------|------------------------|--------------------------|--|--|--|--|--|
| | | | | | ESS Job No: P151-002 | | | Date: 1/25/00 | |
| | | | | | Driller.: Environmental Drilling, Inc. | | | Within 100' of Water: No | |
| | | | | | Well Diameter: N/A | | | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM | |
| | | | | | Drilling Method: Geoprobe | | | Boring Depth: 6.0' | |
| | | | | | Sample Method: 4' Acetate Sampler | | | Depth to Water: 3.8' | |
| | | | Logged By: Daryll Issa | | | | | | |
| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) | | | | |
| A | 0-2 | 24/24 | 1410 | 0.0 | (0-4") topsoil. (3-6") pulverized stone. (6-24") F/M dark brown sand and gravel with SO black cinders; dry; no odor. | | | | |
| B | 2-4 | 48/48 | 1425 | 0.0 | (24-45") F/M brown sand with SO black stained sand and TR silt with LI gravel; dry; no odor. (45-72") F/M brown/dark brown sand with LI gravel; saturated with water; no odor. | | | | |
| C | 4-6 | | | 0.0 | | | | | |
| D | 6-8 | | | | | | | | |
| E | 8-10 | | | | | | | | |
| F | 10-12 | | | | | | | | |
| G | 12-14 | | | | | | | | |
| <u>Comments:</u> | | | | | | | | | |
| PROPORTIONS USED | | ABBREVIATIONS | | Well Construction | | | | | |
| TRACE (TR) | 0-10% | F = FINE | | DEPTH INTERVALS | | | | | |
| LITTLE (LI) | 10-20% | M = MEDIUM | | A = 0-24 in. | G = 144-168 in. | | | | |
| SOME (SO) | 20-35% | C = COARSE | | B = 24-48 in. | H = 168-192 in. | | | | |
| AND | 35-50% | F/M = FINE TO MEDIUM | | C = 48-72 in. | I = 192-216 in. | | | | |
| | | F/C = FINE TO COARSE | | D = 72-96 in. | J = 216-240 in. | | | | |
| | | M/C = MEDIUM TO COARSE | | E = 96-120 in.. | K = 240-264 in. | | | | |
| | | | | F = 120-144 in. | L = 264-288 in. | | | | |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E91

Date: 1/25/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 4.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1025 | 0.0 | (0-13") F/M brown sand and gravel with LI black cinders; dry; no odor. (13-24") F/M dark brown sand with LI gravel; dry; no odor. |
| B | 2-4 | 38/48 | 1100 | 1.0 | (34-46") F/M black stained sand and gravel with SO small/M black cinders; damp at 46"; heavy odor. (46-60") F/M black stained sand and gravel with SO black cinders; saturated with water; heavy odor. (60-72") F black stained silt; saturated with water; heavy petroleum odor. |
| C | 4-6 | 38/48 | | 4.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax: (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F11

Date: 1/6/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 9.0'

Logged By: Daryll Issa/Jason
Wiggin

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 0915 | 0.0 | (0-5") F black topsoil. (5-20") F/M brown to light brown sand with TR gravel and LI cinders; dry; no odor. (20-24") F tan sand; dry; no odor. |
| B | 2-4 | 18/48 | | 0.0 | (44-46") F/M black/yellow/brown sand; dry; no odor. (46-72") F/M cinder ash with SO F/M brown sand at 72"; dry; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 33/48 | 0930 | 0.0 | |
| E | 8-10 | | | 1.6 | (87-89") F black cinder ash. (89-105") F/M brown sand with LI gravel; damp; no odor. (105-120") F/M brown sand with TR silt and TR gravel and TR cinders; saturated with water; no odor. |
| | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F23

Date: 1/7/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 8.0'


Logged By: Jason Wiggin/Nicole
Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1120 | 0.0 | (0-4") topsoil; F/M brown sand with organics. (4-8") F/M brown sand. (8-9") dark brown wood chip band with SO M coal fragments; saturated; odor. (9-24") F/M light gray to gray silty sand; iron staining at 12-14"; M/large purple gravel chips at 20-21"; M/large rounded gray gravel at 20-24". |
| B | 2-4 | 36/48 | | 0.0 | (36-40") F/M silty gray sand; dense. (40-48") F/M light tan loose sand. (48-58") F/M light brown sand; dense; M/large rounded gray gravel. (58-68") M/large cinder ash with M porous cinders and large pieces of coal. (68-72") dense silty brown/black sand; petroleum odor. |
| C | 4-6 | | 1130 | | |
| D | 6-8 | 48/48 | | 0.0 | |
| E | 8-10 | | | | (72-76") M/large cinder ash with M pieces of porous cinders and large pieces of coal. (76-96") F/M gray to brown silty sand; dense at 80-90". (96-120") F silty gray sand; dense; saturation at 96". |
| | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG

| | | |
|---|---|--|
|  272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: F24 |
| | ESS Job No: P151-002 | Date: 1/7/00 |
| | Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| | Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| | Drilling Method: Geoprobe | Boring Depth: 10.0' |
| | Sample Method: 4' Acetate Sampler | Depth to Water: 9.5' |
| | Logged By: Nicole Murry | |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1200 | 0.0 | (0-6") topsoil; F/M brown sand with organics at 0-2". (6-8") dense F/M brown sand with SO coal bits. (8-12") M orange sand with SO M rounded stone. (12-13") gray stone; schist. (13-24") F/M brown sand with SO M black stone; sand throughout; yellow quartz stone at 22". |
| B | 2-4 | 36/48 | | 0.0 | (36-44") M brown/orange silty sand with bits of gray gravel. (44-45") M brown/orange silty sand with bits of gray gravel and stone chips. (45-46") rounded red stone. (46-72") M/C black cinder ash with bits of coal and M/large porous cinders. (72-120") M/C black cinder ash; bits of coal; M/large bits of porous cinders; saturation at 118"; SO brown sand at 118". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 48/48 | | 0.0 | |
| E | 8-10 | | 1210 | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------------------|------------------------|-------------------|---|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
 642 Allens Avenue, Providence, RI
 ESS Job No: P151-002
 Driller.: Environmental Drilling, Inc.
 Well Diameter: N/A
 Drilling Method: Geoprobe
 Sample Method: 4' Acetate Sampler


Boring No.: F25
 Date:
 Within 100' of Water: No
 Instrument: Thermo Environmental
 Instruments, Inc., Model 580B OVM
 Boring Depth: 11.0'
 Depth to Water: 10.5'
 Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1230 | 0.0 | (0-12") large gray and white gravel mixed with SO M light brown sand. (12-20") M light brown sand with SO large gravel. (23-24") M black stained sand with M granular cinder ash; no odor. |
| B | 2-4 | 36/48 | | 0.0 | (36-40") M black stained sand with M granular cinder ash; no odor. (40-48") F/M brown sand with M/large gray rounded gravel and bits of white quartz. (48-70") F light brown silty sand; soft; SO M gray gravel. (70-72") dense F/M silty brown sand. |
| C | 4-6 | | | | |
| D | 6-8 | 28/48 | | 0.0 | |
| E | 8-10 | | 1240 | | (92-100") F/M light brown sand; soft; large bits of rounded gravel throughout. (100-120") F/M gray sand; soft; SO M rounded gravel and M black sand throughout; moist at 100". |
| F | 10-12 | | | | |
| G | 12-14 | | | | (120-132") F/M brown sand with SO M/large gray gravel; saturation at 126". |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (L) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG

| | | |
|---|---|--|
|  2 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: F29 |
| | ESS Job No: P151-002 | Date: 1/10/00 |
| | Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| | Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| | Drilling Method: Geoprobe | Boring Depth: 10.0' |
| | Sample Method: 4' Acetate Sampler | Depth to Water: 9.0' |
| | | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1005 | 0.0 | (0-7") F/M dark brown topsoil; dry; no odor. (7-10") F/M light brown sand with LI gravel; dry; no odor. (10-15") F/C brown sand; damp; no odor. (15-24") F brown sand with TR gravel; dry; no odor. |
| B | 2-4 | 42/48 | | 0.0 | (30-36") F/M brown sand with SO gravel; dry; no odor. (36-72") F/M brown sand with TR gravel; dry; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 46/48 | | 0.0 | |
| E | 8-10 | | 1015 | 0.0 | (74-92") F/M light brown/brown sand with SO gravel; damp; no odor. (92-120") F/M brown/red sand with SO gravel; no odor. Wet at 108". |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|--|-------------------------------------|
| TRACE (TR) 0-10% | F = FINE | (+.3-7.0") PVC Solid Riser (7.0-12.0') PVC Screen One inch sump at 12.0' | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | F = 120-144 in. L = 264-288 in. | |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F30

Date: 1/10/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 8.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1325 | 0.0 | (0-6") topsoil; M brown sand; grass and organics at 0-1. (6-7") stone. (7-24") F loose silty light tan sand. |
| B | 2-4 | 48/48 | | 0.0 | (24-36") F dense brown sandy silt. (36-72") F/M light tan and brown sand; iron staining at 36-38". |
| C | 4-6 | | | | |
| D | 6-8 | 48/48 | 1325 | 0.0 | |
| E | 8-10 | | | | (72-80") F/M light tan and brown sand. (80-120") dense brown sandy silt; saturation at 96". |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI ESS Job No: P151-002 | Boring No.: F31 Date: 1/10/00 Within 100' of Water: No |
| Driller.: Environmental Drilling, Inc. | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Well Diameter: N/A | Boring Depth: 14.0' |
| Drilling Method: Geoprobe | Depth to Water: 8.3' |
| Sample Method: 4' Acetate Sampler | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 0815 | 0.0 | (0-6") F/M brown topsoil; dry; no odor. (6-12") F/M brown/dark brown sand; dry; no odor. (12-24") F/M brown sand with TR silt and TR gravel. |
| B | 2-4 | 35/48 | | 0.0 | (37-45") F/M black cinder ash; dry; no odor. (45-51") F brown/dark brown sand; dry; no odor. (51-61") F/M red/brown sand with LI gravel; dry; no odor. (61-72") F/M brown sand with LI gravel; damp; no odor. |
| C | 4-6 | | 0930 | 0.0 | |
| D | 6-8 | 31/48 | | 0.0 | |
| E | 8-10 | | | 0.0 | (99-102") F/M brown sand with TR cinder ash; wet; no odor. (102-104") F/M black cinder ash with TR F/M brown sand. (104-120") F/C brown sand and SO gravel; wet; no odor. |
| | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------------------|------------------------|-------------------|---|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
 642 Allens Avenue, Providence, RI
 ESS Job No: P151-002
 Driller.: Environmental Drilling, Inc.
 Well Diameter: N/A
 Drilling Method: Geoprobe
 Sample Method: 4' Acetate Sampler

Boring No.: F37
 Date: 1/12/00
 Within 100' of Water: No
 Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
 Boring Depth: 6.0'
 Depth to Water: not determined
 Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 0825 | 0.0 | (0-2") grass and roots. (2-24") M/F dark brown sand; SO silt mixed with M/large rounded gravel; SO small bits of shale and cinder ash/porous cinders at (18-24") cinder stone at 6". |
| B | 2-4 | 18/48 | | 0.0 | (54-72") M brown sand with M/large gravel; cinder ash strata at 68-72"; TR M cinder ash throughout. |
| C | 4-6 | | 0835 | | |
| D | 6-8 | 0/48 | | 0.0 | no recovery - stone in sleeve with SO saturated dirt. |
| E | 8-10 | | | 0.0 | |
| | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:
 No recovery from (6-10') - stone in sleeve with SO saturated dirt. Depth to water could not be determined.

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



72 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F39

Date: 1/12/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 9.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 18/24 | 0905 | | (6-24") M brown sand with small/M rounded gravel; M cinder ash stone at 8-12"; large stone at 20" and cinder ash throughout 20-24". |
| B | 2-4 | 24/48 | | 0.0 | (48-66") M brown sand with M/large rounded gravel; F small bits of black/gray shale throughout strata. (66-72") dense silty brown sand with M brown sand and rounded gravel; moist. |
| C | 4-6 | | 0935 | | |
| D | 6-8 | 36/48 | | 86.0 | (84-96") M brown sand with large cinder ash stone with small/M round gravel. (96-110") large brown sand with M/large rounded gravel; wet. (110-120") M petroleum stained sand mixed with M/large gravel and cinders; loose; saturation at 110"; heavy odor. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F40

Date: 1/12/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 5.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (In.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1020 | 0.0 | (0-2") grass and roots. (2-10") M brown sand with organic roots. (10-24") M brown/orange sand; soft; M rounded gravel. |
| B | 2-4 | 48/48 | 1025 | 0.0 | (24-72") F light brown silty sand; saturated at 60"; M rounded gravel throughout. |
| C | 4-6 | | | | |
| D | 6-8 | 48/48 | | 125 | |
| E | 8-10 | | | | (72-75") F light brown silty sand; saturated at 60"; M rounded gravel throughout. (75-96") M/large brown sand; saturated; iron stained soil at 76-96". (96-118") petroleum stained black wood fiber; heavy petroleum odor; dense and wet. (118-120") F light brown soil saturated. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F41

Date: 1/12/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 9.0'

Logged By: Nicole Murry

| Depth (Intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1105 | 0.0 | (0-10") M brown sand mixed with M/large rounded stones; grass at 0-1". (10-15") M cinder ash mixed with M brown sand. (15-20") brick. (20-24") black cinder ash with large bits of coal and cinder ash stone. |
| B | 2-4 | 36/48 | | | (36-66") M/large cinder ash mixed with M/large bits of coal; brick at 36-38"; gravel at 60". (66-72") F black cinder ash. |
| C | 4-6 | | 1125 | 0.0 | |
| D | 6-8 | 24/48 | | 28 | |
| E | 8-10 | | | | (96-100") F black cinder ash. (100-104") petroleum saturated wood fibers. (104-120") F black cinder ash with SO M gravel throughout; wet at 104"; heavy petroleum odor. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

PROPORTIONS USED

TRACE (TR) 0-10%
LITTLE (LJ) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

Well Construction

DEPTH INTERVALS

A = 0-24 in. G = 144-168 in.
B = 24-48 in. H = 168-192 in.
C = 48-72 in. I = 192-216 in.
D = 72-96 in. J = 216-240 in.
E = 96-120 in.. K = 240-264 in.
F = 120-144 in. L = 264-288 in.

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: F42 |
| ESS Job No: P151-002 | Date: 1/12/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 10.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 7.5' |
| | Logged By: Nicole Murry |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1200 | 0.0 | (0-6") M brown sand; grass and roots at 0-1". (6-14") M brown sand mixed with F/C black cinder ash. (14-24") F black loose cinder ash. |
| B | 2-4 | 36/48 | | | (36-40") F black loose cinder ash. (40-44") C solid light red ash. (44-48") C solid light purple ash. (48-52") M black cinders with F brick bits. (52-54") C solid light purple ash. (54-72") F loose black cinder ash with SO coal and cinder ash stone throughout. |
| C | 4-6 | 36/48 | 1220 | 0.0 | |
| D | 6-8 | 30/48 | | 1.0 | |
| E | 8-10 | | | | (90-116") F/M black wet cinder ash with bits of gravel, cinder stone, and ash throughout. (116-118") petroleum saturated cinder ash; petroleum odor. (118-120") M/C light yellow porous cinders; wood fibers at 114-116". |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



72 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F43

Date: 1/12/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 8.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1250 | 0.0 | (0-4") M brown sand with roots, grass, and topsoil. (4-8") F gray silty sand. (8-12") F black cinder ash with M/large bits of coal. (12-24") F black cinder ash with small bits of coal. |
| B | 2-4 | 36/48 | | | (36-48") F black cinder ash with small bits of coal. (48-60") M/C cinder ash with bits of stone (gravel), brick, and orange porous cinders at 48-50". (60-62") brick. (62-64") F/M light orange ash. (64-66") F/M light yellow ash. (66-72") M/C light yellow and tan ash mixed with F/M brown sand; moist at 70". |
| C | 4-6 | | 1300 | 0.0 | |
| D | 6-8 | 24/48 | | 0.0 | |
| E | 8-10 | | | | (72-96") no recovery, (96-100") large porous cinders; saturated. (100-116") F/M black cinder ash; saturated. (116-120") large gravel and stone with F/M brown sand. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F44

Date: 1/12/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 8.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1324 | 0.0 | (0-10") very F loose light tan sand with roots. (10-24") very F black cinder ash mixed with M brown sand and SO coal bits and SO gravel; large gravel at 22-24". |
| B | 2-4 | 24/48 | | 0.0 | (48-52") large bits of coal mixed with F brown sand. (52-56") large gravel with M light brown sand and coal bits. (56-66") C black cinder ash and C large bits of gray porous cinders. (66-68") M light red cinder; solid. (68-72") M brown sand with SO M rounded gravel; moist. |
| C | 4-6 | | 1340 | | |
| D | 6-8 | 48/48 | | 108 | (72-84") C black cinders with M/large rounded gravel and M brown sand. (84-96") F light brown silty sand; saturated; petroleum odor. (96-110") F black stained silty sand with C cinder ash and coal; heavy petroleum odor. (110-120") F light brown silty sand; saturated; petroleum odor. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LJ) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F45

Date: 1/13/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 6.5'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 22/24 | 1210 | 0.0 | (2-12") F/M brown sand with TR gravel; dry; no odor. (12-16") F/M brown sand with SO black sand; dry; no odor. (16-24") F/M brown sand with TR gravel; dry; no odor. |
| B | 2-4 | 42/48 | | 0.0 | (30-61") M/C brown sand with SO gravel; dry; no odor. (61-72") F/M black stained sand; wet at 78"; saturated with heavy petroleum odor. |
| C | 4-6 | | 1230 | 144 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LJ) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI ESS Job No: P151-002 | Boring No.: F46 Date: 1/12/00 Within 100' of Water: No |
| Driller.: Environmental Drilling, Inc. | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Well Diameter: N/A | Boring Depth: 10.0' |
| Drilling Method: Geoprobe | Depth to Water: 4.5' |
| Sample Method: 4' Acetate Sampler | Logged By: Nicole Murry |

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1445 | 0.0 | (0-6") M brown sand with roots. (6-12") F/M brown silty sand; dense; with small/M rounded gravel. (12-24") F/C black cinder ash mixed with SO brown sand; C coal bits at 18-20"; coal throughout 20-24". |
| B | 2-4 | 42/48 | | 0.0 | (28-40") M brown and black sand with small gravel bits. (40-48") F dense brown/black cinder ash with C cinder ash and porous cinders at 42-44"; SO brown sand throughout. (48-52") M light orange cinder ash and porous cinders with M orange sand and wood fibers. (52-66") F black cinder ash with M/C porous cinders and M/large gravel bits; saturated at 52". (66-72") C black cinder ash. |
| C | 4-6 | | 1510 | | |
| D | 6-8 | | | 0.0 | (72-120") saturated black M/large cinder ash mixed with F/M black sand; porous cinders throughout; petroleum odor. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LJ) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F47

Date: 1/13/00

Within 100' of Water: No

Instrument: Thermo Environment
Instruments, Inc., Model 580B O₂

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1315 | 0.0 | (0-4") asphalt and gravel. (4-19") F/M brown sand and large gravel; dry; no odor. (19-24") F black s dry; sweet odor. |
| B | 2-4 | 45/48 | | 21.2 | (27-31") F/M brown sand with TR gravel; dry; no odor. (31-57") F/M black stained sand and gravel; c light odor. (57-72") F/M black stained sand; wet; heavy odor; black shiny coal pieces with dull cinder interval. |
| C | 4-6 | | 1330 | 50.1 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|---|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: F48 |
| ESS Job No: P151-002 | Date: 1/13/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environment Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 5.0' |
| | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1350 | 3.1 | (0-7") F/M brown sand with LI gravel; dry; no odor. (7-24") F/M black stained sand with SO black cinders; dry; light odor. |
| B | 2-4 | 45/48 | | 4.0 | (27-39") F/M dark brown sand with LI cinder ash; dry; no odor. (39-49") F/M orange stained sand with TR cinder ash; dry; no odor. (49-72") F/M black stained sand with LI silt at 60"; shiny/dull black cinders throughout entire 4' interval; wet at 60"; heavy odor. |
| C | 4-6 | | 1410 | 8.3 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|---|------------------------|-------------------|--|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F56

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environment
Instruments, Inc., Model 580B OVI

Boring Depth: 6.0'

Depth to Water: 5.5'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1435 | 0.0 | (0-2") asphalt and concrete bits. (2-14") F loose light tan sand with SO rounded stone. (14-16") dense cinder ash with coal. (16-18") C red/orange porous cinders. (18-24") loose black cinder ash; SO orange clay at 23". |
| B | 2-4 | 36/48 | | 0.0 | (36-39") F loose gray sand. (37-40") C orange sand; loose. (40-44") large bits of coal with M brick red and orange sand. (44-60") brick red sand with large coal bits. (60-72") C black cinder ash with porous cinders and large bits of coal; wet at 68"; saturation at 66". Sheen observed. |
| C | 4-6 | | 1455 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F57

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.0'


Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1430 | 0.0 | (0-12") F/M brown sand and concrete with SO gravel; dry; no odor. (12-17") F/M black cinder ash/cinders with SO gravel; dry; no odor. (17-24") F brown sand with TR gravel; dry; no odor. |
| B | 2-4 | 41/48 | 1445 | 0.0 | (31-59") F/M brown sand with SO gravel; dry; no odor. (59-72") F/M brown sand with LI gravel and LI silt; saturated with water; light odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

Test Pit Excavation Log

| | | | | |
|---|-----------------|---|-------------------|-----------------------------------|
|  Environmental Science Services, Inc. 172 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Environmental Scientists, Engineers, and Planners | Client | Providence Gas Company | Test Pit No. | F41 |
| | Site Name | Allens Avenue Remediation Project | Date | 9/25/00 |
| | Site Address | 642 Allens Avenue, Providence, Rhode Island | Observed By | D. Issa, S. Courtemanche, A. Frye |
| | Job Number | P151-002 | Checked By | Gary Kaufman |
| | Contractor | Tantara Corporation | Test Pit Depth | 7.5 Feet |
| | Excavator Reach | 12 feet | Groundwater Depth | 7.5 Feet |

Test Pit Description

- 0-6" Approximately 1/2 inch root layer over 6" light brown topsoil.
- 6-18" Black slag, tan roofing paper with black staining. Mothball odor.
- 18-57" Asphalt pieces (some hard, some soft and pliable PID = 11 ppm), red and white brick fragments, coal fragments, glass, metal, copper, and other fill. Strong mothball odor.
- 57-90" Slag. Mothball odor.

Remarks:

Mothball odor during entire excavation. PID over excavation peaked at 3.3 ppm.

Groundwater entering bottom of excavation at 7.5 feet. No sheen visible.

Location/Sketch:

West side of PGC Control Building adjacent to billboard and Boring F41. See Figure 2 in SIR.

Soil Boring Report

PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. **VHB-1**
 Well ID: **VHB-1**
 Job Number: **71274** Sheet 1 of 1

Drilling Company: **Subsurface Drilling and Remediation** Boring Location: **By office / property line north**
 Driller: **Jim Goldthwaite / Josh Downing** Elevation: **NA** Datum: **NA**
 Inspector: **Keith Sullivan / Adam Rosenblatt** Start Date: **1/15/2002** End Date: **1/15/2002**

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2' split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|-------------------|---|--------------|
| 0 - 2 | 1.2 | S1 | 24 / 13 | 8 - 12 13 - 10 | 3" Asphalt over 7" coal slag, over light brown, medium dense fine SAND trace silt, trace gravel moist, no sheen or odor. | |
| 2 - 4 | ND | S2 | 24 / 12 | 8 - 7 6 - 6 | Light brown, loose, fine SAND, moist, no sheen or odors. | |
| 4 - 6 | 111.6 | S3 | 24 / 11 | 1 - 2 1 - 2 | Grayish brown, very loose, fine to medium SAND, trace silt, strong chemical odor, separate phase product, strong chemical odor. | |
| 6 - 8 | 85.4 | S4 | 24 / 10 | 2 - 2 2 - 1 | Grayish brown, very loose, fine to medium SAND, trace silt, strong chemical odor, separate phase product, strong chemical odor. | |
| 8 - 10 | 105.6 | S5 | 24 / 11 | 1 - 3 5 - 6 | 8" gray, loose, fine SAND, trace silt, over 3" black coarse SAND, oil saturated, strong chemical odor. | |
| 10 - 12 | 64.2 | S6 | 24 / 10 | 1 - 2 1 - 2 | Black, very loose, medium SAND, strong chemical odor, wet. | |
| 12 - 14 | 31.2 | S7 | 24 / 6 | 1 - 2 2 - 4 | Black, very loose, medium SAND, strong chemical odor, wet. | |

Bottom of exploration 14' below grade

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | PROPORTIONS | Notes |
|------------------------------------|------------------------------------|-----------------|---|
| 0 - 4 V. Loose | <2 V. Soft | Trace 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). |
| 4 - 10 Loose | 2 - 4 Soft | Little 10 - 20% | |
| 10 - 30 M. Dense | 4 - 8 M. Stiff | Some 20 - 35% | |
| 30 - 50 Dense | 8 - 15 Stiff | And 35 - 50% | |
| >50 V. Dense | 15 - 30 V. Stiff | | |
| | >30 Hard | | |

Soil Boring Report

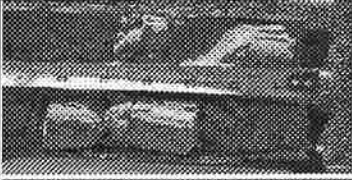




PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. VHB-3
 Well ID: VHB-3
 Job Number: 71274 Sheet 1 of 1

Drilling Company: Subsurface Drilling and Remediation
 Driller: Jim Goldthwaite / Josh Downing
 Inspector: Keith Sullivan / Adam Rosenblatt

Boring Location: _____
 Elevation: NA Datum: NA
 Start Date: 1/14/2002 End Date: 1/14/2002

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2' split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | PerVRec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|--------------------|---|--|
| 0 - 2 | 0.4 | S1 | 24 / 6 | 2 - 2 1 - 2 | Light brownish gray (2.5Y 6/2), very loose, fine sand, dry, no sheen or odors. |  |
| 2 - 4 | 13.3 | S2 | 24 / 5 | 1 - 1 4 - 4 | Black (10YR 2/1), loose, sand, some silt, little gravel, wet, moderate chemical odor, slight sheen. |  |
| 4 - 6 | 20.3 | S3 | 24 / 5 | 6 - 3 2 - 1 | Black (10YR 2/1), loose sand, little silt, wet, faint to moderate chemical odor, slight sheen. |  |
| 6 - 8 | | S4 | NR | wt rods | Slight sheen on spoon. | |
| 8 - 10 | | S5 | NR | rods - 12 5 - 4 | Faint chemical odor, slight sheen on spoon. | |
| 10 - 12 | 43.6 | S6 | 24 / 12 | 2 - 2 1 - 2 | Black (10YR 2/1), very loose fine sand, some silt, wet, sheen, free product. |  |
| 12 - 14 | 9.0 | S7 | 24 / 18 | 1 - 2 1 - 2 | Black (10YR 2/1), very loose, organic silt over dark greenish gray (10Y 3/1) fine sand, little silt, wet, no sheen or odor. |  |

Bottom of exploration 14' below grade.

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|------------------------------------|----------|------------------------------------|----------|-------------|----------|-------|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

Soil Boring Report

PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. **VHB-5**

Well ID: **VHB-5**

Job Number: **71274**

Sheet 1 of 2

Drilling Company: **Subsurface Drilling and Remediation**

Boring Location: **East of asphalt pile**

Driller: **Jim Goldthwaite / Josh Downing**

Elevation: **NA**

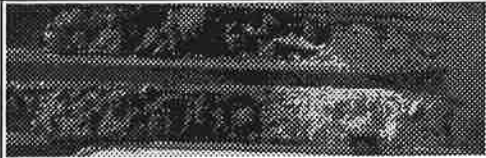

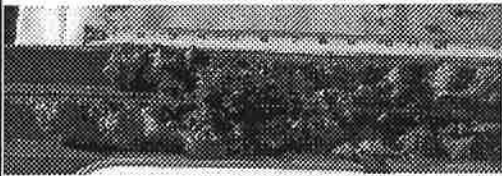


Datum: **NA**

Inspector: **Keith Sullivan / Adam Rosenblatt**

Start Date: **1/14/2002**

End Date: **1/14/2002**

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2' split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Per/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|-------------------|--|--|
| 0 - 2 | ND | S1 | 24 / 12 | 8 - 18 40 - 22 | Very dark grayish brown (10YR 3/2), fine sand, little silt, dry, over concrete, no sheen or odors. |  |
| 2 - 4 | ND | S2 | 24 / 6 | 7 - 10 4 - 4 | Very dark grayish brown (10YR 3/2), medium dense, sand and silt, little gravel, wet, no sheen, faint chemical odor. |  |
| 4 - 6 | ND | S3 | 24 / 20 | 1 - 2 4 - 5 | Very dark grayish brown (10YR 3/2), loose, fine SAND, little silt, wet, over black silt over dark greenish gray (5BG 3/1) sand and silt over black sand and silt, separate phase product, moderate ammonia odor. |  |
| 6 - 8 | ND | S4 | 24 / 10 | 4 - 4 1 - 1 | Black (10YR 2/1), loose, silt, some sand, trace gravel, wet, faint chemical odor, slight sheen on sample, coal tar droplets. |  |
| 8 - 10 | ND | S5 | 24 / 10 | 1 - 2 1 - 3 | Black stained very loose, sand, some silt, coal tar droplets, over dark olive gray (5Y 3/2) sand, little silt, faint chemical odor, slight sheen. |  |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | PROPORTIONS | Notes |
|------------------------------------|------------------------------------|-----------------|--|
| 0 - 4 V. Loose | <2 V. Soft | Trace 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grain size. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). |
| 4 - 10 Loose | 2 - 4 Soft | Little 10 - 20% | |
| 10 - 30 M. Dense | 4 - 8 M. Stiff | Some 20 - 35% | |
| 30 - 50 Dense | 8 - 15 Stiff | And 35 - 50% | |
| >50 V. Dense | 15 - 30 V. Stiff | | |
| | >30 Hard | | |

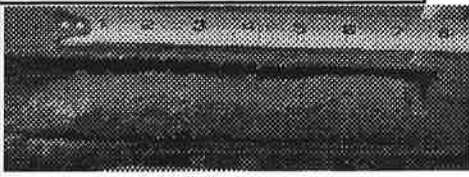
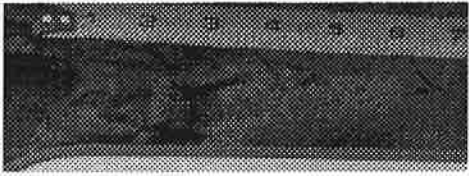
Soil Boring Report

PROJECT
 New England Gas Company
 642 Allens Avenue
 Providence, Rhode Island

Report of Boring No. VHB-5
 Well ID: VHB-5
 Job Number: 71274 Sheet 2 of 2

Drilling Company: Subsurface Drilling and Remediation Boring Location: East of asphalt pile
 Driller: Jim Goldthwaite / Josh Downing Elevation: NA Datum: NA
 Inspector: Keith Sullivan / Adam Rosenblatt Start Date: 1/14/2002 End Date: 1/14/2002

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2' split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|----------------|--|--|
| 10 - 12 | ND | S6 | 24 / 7 | 1 - 11/2 3 | Dark olive gray (5Y 3/2) very loose, fine sand, some silt, wet, no odors or sheen. |  |
| 12 - 14 | ND | S7 | 24 / 6 | 1 - 2 1 - 3 | Dark olive gray (5Y 3/2) very loose, fine sand, some silt, trace gravel, wet, no odors or sheen. |  |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Bottom of exploration 14' below grade.

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | PROPORTIONS | Notes |
|------------------------------------|------------------------------------|-----------------|---|
| 0 - 4 V. Loose | <2 V. Soft | Trace 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). |
| 4 - 10 Loose | 2 - 4 Soft | Little 10 - 20% | |
| 10 - 30 M. Dense | 4 - 8 M. Stiff | Some 20 - 35% | |
| 30 - 50 Dense | 8 - 15 Stiff | And 35 - 50% | |
| >50 V. Dense | 15 - 30 V. Stiff | | |
| | >30 Hard | | |

Soil Boring Report

PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. **VHB-14**

Well ID: **NA**

Job Number: **71274** Sheet 1 of 1

Drilling Company: **Subsurface Drilling and Remediation**

Boring Location: **West of Office, along Allens Ave.**

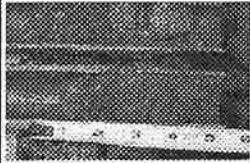
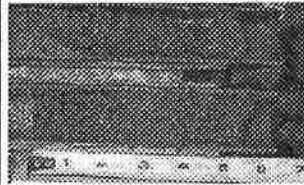
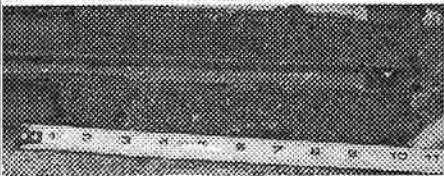
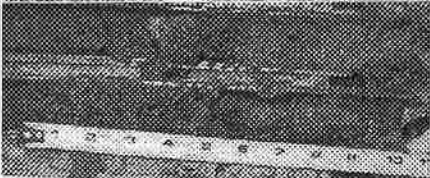
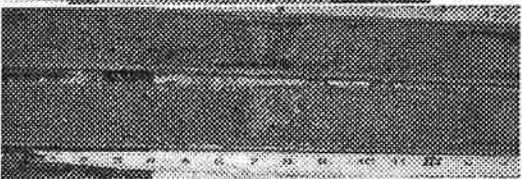
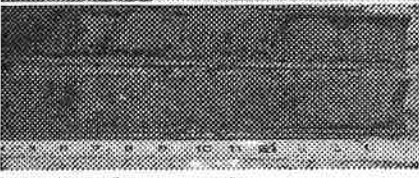
Driller: **Jim Goldthwaite / Josh Downing**

Elevation: **NA** Datum: **NA**

Inspector: **Keith Sullivan / Adam Rosenblatt**

Start Date: **1/17/2002** End Date: **1/17/2002**

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2" split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|----------------|--|--|
| 0 - 5 | ND | S1 | NA | NA | Auger cuttings - Loose, dark brown, medium SAND and silt, trace coal slag, moist. | |
| 5 - 7 | ND | S7 | 24 / 5 | 1 - 1 1 - 1 | Brown to black, very loose SAND and silt, some coal slag, trace gravel, moist, no sheen or odor. |  |
| 7 - 9 | 1.8 | S3 | 24 / 6 | 1 - 4 5 - 1 | Black, loose COAL SLAG and rock fragments, trace brick, wet, no sheen or odor. |  |
| 9 - 11 | 1.8 | S4 | 24 / 10 | 1 - 3 3 - 4 | Gray to black, loose, medium to coarse SAND, trace brick, no sheen or odors. |  |
| 10 - 12 | 1.8 | S5 | 24 / 6 | 1 - 4 5 - 1 | 7" gray to black, loose, medium to coarse SAND over 7" light grayish brown medium SAND trace gravel, wet no sheen or odor. |  |
| 12 - 14 | 1.2 | S6 | 24 / 16 | 3 - 3 4 - 5 | Light gray, loose, medium to coarse SAND, trace gravel, wet no sheen or odor. |  |
| | | | | | |  |

Bottom of exploration 14' below grade.

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|------------------------------------|----------|------------------------------------|----------|-------------|----------|-------|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

Soil Boring Report

PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. VHB-15

Well ID: NA

Job Number: 71274 Sheet 1 of 1

Drilling Company: Subsurface Drilling and Remediation

Boring Location: Out front, north of VHB 14

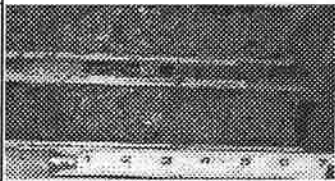
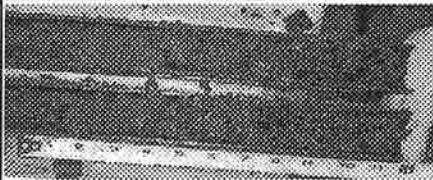
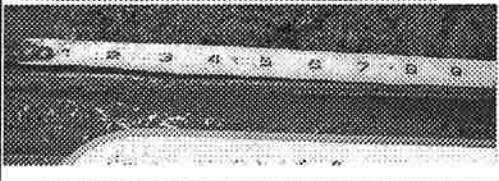
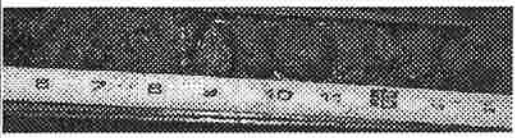
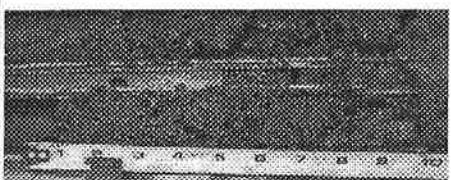
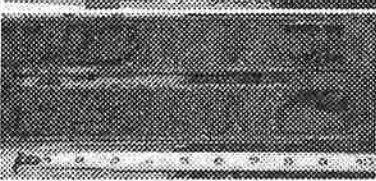
Driller: Jim Goldthwaite / Josh Downing

Elevation: NA Datum: NA

Inspector: Keith Sullivan / Adam Rosenblatt

Start Date: 1/17/2002 End Date: 1/17/2002

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2' split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|--|-------------|---|---------|---|--|--|
| 0 - 5 | ND | S1 | NA | NA | Auger cuttings - Loose, dark brown, medium SAND and silt, trace coal slag, moist. | |
| 5 - 7 | ND | S7 | 24 / 6 | 2 - 1 2 - 1 | Rusty brown to black, very loose, COAL fragments, moist, no sheen or odor. |  |
| 7 - 9 | ND | S3 | 24 / 12 | 1 - 2 3 - 3 | Black, loose, medium SAND, some silt, little gravel, trace wood, wet, gray staining, moderate chemical odor. |  |
| 9 - 11 | 3.0 | S4 | 24 / 8 | 2 - 3 3 - 5 | Black, loose, GRAVEL, some silt and medium sand, wet, faint sheen, faint unrecognizable odor. |  |
| | | | | | |  |
| 10 - 12 | 3.0 | S5 | 24 / 10 | 7 - 5 3 - 3 | Black, loose, GRAVEL, some silt, some medium sand, wet, faint chemical odor, coal tar sheen. |  |
| 12 - 14 | 5.5 | S6 | 24 / 10 | 2 - 2 4 - 9 | 2" black, loose, GRAVEL, some silt, over 8" black, loose, medium sand, wet, faint chemical odor, coal tar sheen. |  |
| | | | | | Bottom of exploration 14' below grade. | |
| GRANULAR SOILS BLOWS/FT DENSITY 0 - 4 V. Loose 4 - 10 Loose 10 - 30 M. Dense 30 - 50 Dense >50 V. Dense | | COHESIVE SOILS BLOWS/FT DENSITY <2 V. Soft 2 - 4 Soft 4 - 8 M. Stiff 8 - 15 Stiff 15 - 30 V. Stiff >30 Hard | | PROPORTIONS Trace 0 - 10% Little 10 - 20% Some 20 - 35% And 35 - 50% | Notes 1) Soil stratification lines represent a graphical depiction of changes in soil type and grain size. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). | |

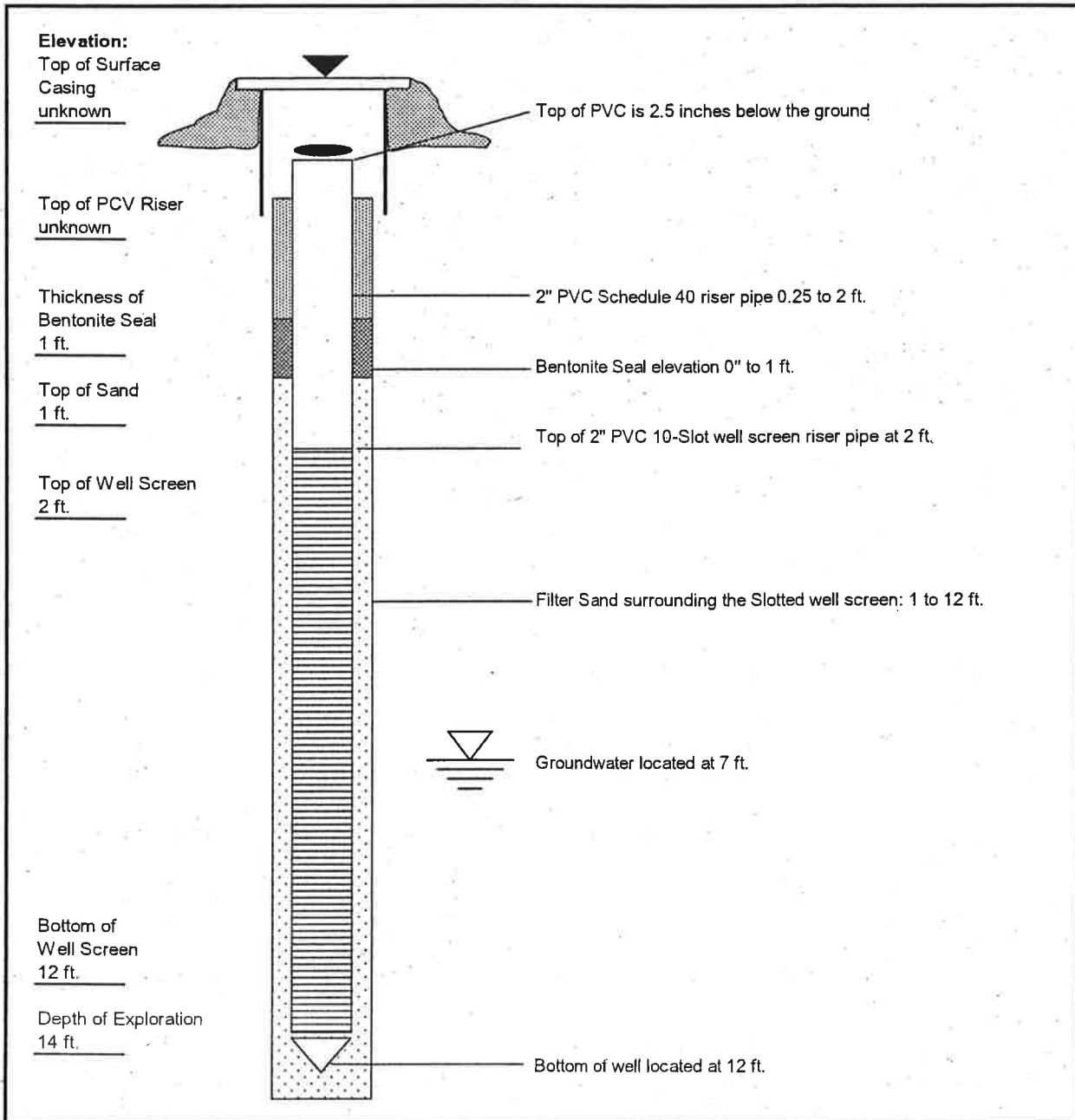
16

VHB Monitoring Well Diagram

Project Name: New England Gas
Location: 642 Allens Ave
Providence, RI

Project No. 71274
Contractor: Subsurface Drilling
Scientist: K. Sullivan / A. Rosenblatt

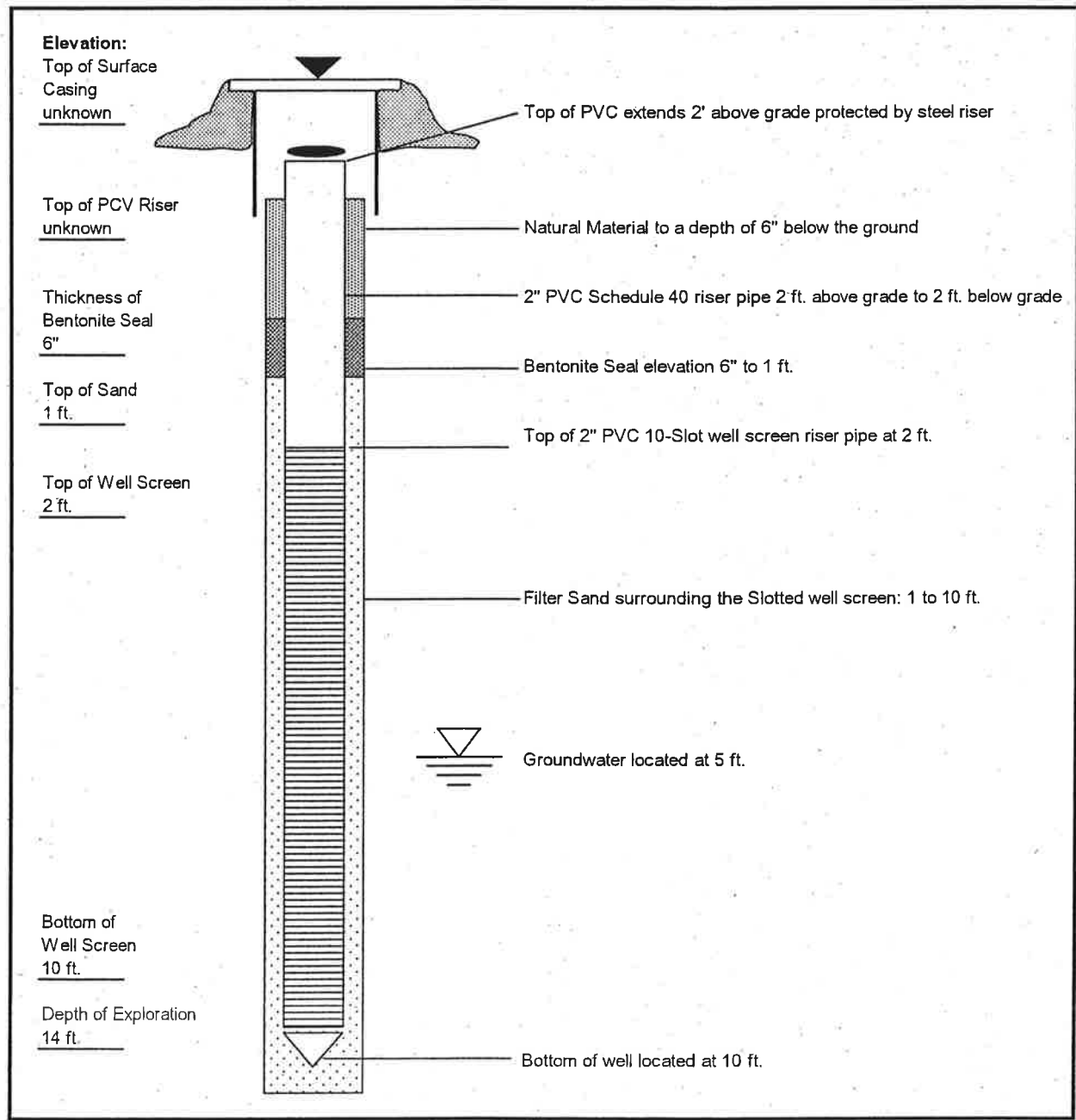
Date: 15-Jan-02
Well No. VHB-1
GW Depth: Approx. 7 Feet



N6

VHB Monitoring Well Diagram

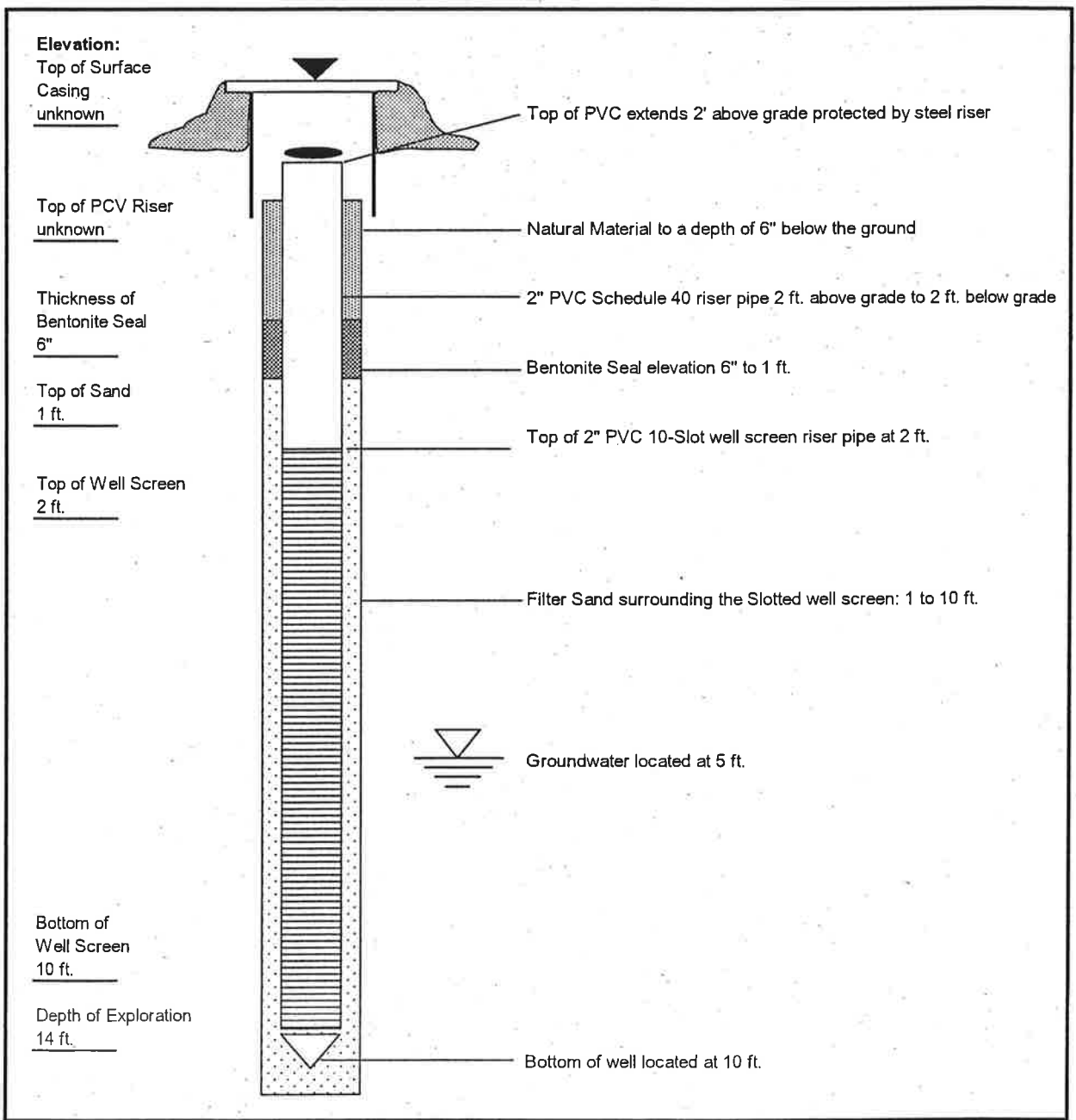
Project Name: New England Gas Project No. 71274 Date: 14-Jan-02
Location: 642 Allens Ave Contractor: Subsurface Drilling Well No. VHB-3
Providence, RI Scientist: K. Sullivan / A. Rosenblatt GW Depth: Approx. 5 Feet



NECC WAS NOT FOUND IN DEC 2009 p 6

VHB Monitoring Well Diagram

Project Name: New England Gas Project No: 71274 Date: 14-Jan-02
Location: 642 Allens Ave Contractor: Subsurface Drilling Well No: VHB-5
Providence, RI Scientist: K. Sullivan / A. Rosenblatt GW Depth: Approx. 5 Feet



TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-301D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 17.87
Final Boring Depth (ft.): 30
Date Start - Finish: 5/22/2014 - 5/30/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/3/14 | N.A | 10.01 | 3 Days |
| 6/11/14 | 11:55 | 9.99 | 11 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Top 12": Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, Dry Bottom 12": Brown (10YR, 5/3) fine SAND, some Silt, Dry | 1 2 | ND ND | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Red-brown (5YR, 4/4) SLAG, some fine to coarse Sand, little Ash, Dry | | ND | | | | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Red-brown (5YR, 4/4) SLAG, some fine to coarse Sand, little Ash, Dry | | ND | | | | | |
| 4 | S-4 | 6-8 | 24 | 0 | 3 1 1 1 | S-4 : Very loose, no recovery | | NM | | | | | |
| 5 | S-5 | 8-10 | 24 | 6 | 1 1 2 2 | S-5 : Very loose, dark brown (10YR, 3/2) SLAG, some fine to coarse SAND, trace (+) Gravel, trace (+) Silt, trace (+) Brick, trace (+) Coal, trace Ash, Wet | 3 | ND | | | | | ← PVC Riser |
| 6 | S-6 | 10-12 | 24 | 6 | 3 1 2 9 | S-6 : Very loose, dark brown (10YR, 3/2) SLAG, some fine to coarse SAND, trace (+) Gravel, trace (+) Silt, trace (+) Brick, trace (+) Coal, trace Ash, Wet | | ND | | | | | |
| 7 | S-7 | 12-14 | 24 | 12 | 8 1 1 6 | S-7 : Top 4": Dark brown (10YR, 3/2) SLAG, some fine to coarse SAND, trace (+) Gravel, trace (+) Silt, trace (+) Brick, trace (+) Coal, trace Ash, Wet Bottom 8" Very loose, gray brown (10YR, 4/2) fine to coarse SAND, little Silt, trace (+) Gravel, Wet | | ND ND | | | | | |
| 8 | S-8 | 14-16 | 24 | 4 | 17 11 8 2 | S-8 : Medium dense, gray brown (10YR, 4/2) GRAVEL, little fine to coarse Sand, little Silt, Wet | | ND | | | 14 | 3.9 | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 8 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-301D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:07 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-301D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth(ft.) | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|------------|---------------------|------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 8 | 3 2 5 4 | S-9 : Loose, gray brown (10YR, 4/2) fine to coarse SAND, little Gravel, little Silt, Wet | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 4 | 3 4 4 4 | S-10 : Loose, gray brown (10YR, 4/2) fine to coarse SAND, little Gravel, little Silt, Wet | | | | | | | | |
| 19 | | | | | | | 4 | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 12 | 25 8 1 2 | S-11 : Loose, dark gray (10YR, 4/1) Organic SILT and SAND, little Wood, little Roots, trace Gravel, Wet | | | | | 20 | -2.1 | | |
| 21 | | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 16 | 4 3 4 4 | S-12 : Top 6": Dark gray (10YR, 4/1) Organic SILT and SAND, little Wood, little Roots, trace Gravel, Wet Bottom 10": Dark gray (10YR, 4/1) Organic SILT, trace Wood, trace Roots, Wet | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 20 | 4 3 1 2 | S-13 : Top 6": Dark gray (10YR, 4/1) Organic SILT, trace Wood, trace Roots, Wet Bottom 14" red brown (5YR, 5/4) PEAT, some Roots, some Wood, trace Gravel, Wet | | | | | | | | |
| 25 | | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 24 | 13 10 14 13 | S-14 : Top 8": Red brown (5YR, 5/4) PEAT, some Roots, some Wood, trace Gravel, Wet 8"-16": Red brown (5YR, 5/4) fine to coarse SAND and SILT, trace Gravel, trace Roots, trace wood, trace Organics, Wet Bottom 8": Gray (10YR, 4/1) fine SAND, trace Silt, trace Gravel, Wet | | | | | 27 | -9.1 | | |
| 27 | | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 14 | 5 4 4 3 | S-15 : Loose, gray (10YR, 4/1) fine SAND and SILT, trace (+) Gravel, Wet | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -12.1 | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs, 2" Diameter, Schedule 40, flush joint, PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 16-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-301D**

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-302D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 16.97
Final Boring Depth (ft.): 30
Date Start - Finish: 5/22/2014 - 5/30/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/11/14 | 10:45 | 9.47 | 13 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Top 12" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, dry Bottom 12" Yellow brown (10YR, 5/6) fine SAND, little Silt, dry | 1 2 | ND ND | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/6) fine SAND, some Silt, moist | 0.1 | | | | Possible Fill/SAND and SILT | ← Bentonite Seal |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Brown (10YR, 4/3) fine to medium SAND, little Gravel, little Silt, moist | 0.1 | | | | | |
| 5 | | | | | | | | | | | 5 12.0 | |
| 6 | S-4 | 6-8 | 24 | 3 | 12 11 12 12 | S-4 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, trace (+) Gravel, trace Silt, wet | | ND | | | | |
| 7 | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 6 | 12 12 12 13 | S-5 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, trace (+) Gravel, trace Silt, wet | 3 | ND | | | | ← PVC Riser |
| 9 | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 16 | 10 10 11 14 | S-6 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, trace (+) Gravel, trace Silt, wet | | ND | | | SAND | |
| 11 | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 0 | 12 15 11 12 | S-7 : Medium dense, no Recovery | | NM | | | | |
| 13 | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 9 | 13 9 14 9 | S-8 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, little Gravel, trace Silt, wet | | ND | | | | |
| 15 | | | | | | | | | | | | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 7 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-302D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-302D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 12 | 9 11 23 7 | S-9 : Dense, gray (GLEY, 5/N) fine to coarse SAND, little (+) Gravel, trace (+) Silt, moderate oil-like odor, wet | | 154 | | | | | <p>← Filter Sand</p> <p>← Bentonite Seal</p> <p>Well Screen</p> |
| 17 | | | | | | | | | | Mod | | | |
| 18 | S-10 | 18-20 | 24 | 14 | 23 12 23 15 | S-10 : Dense, tan (10YR, 4/2) fine to coarse SAND, little Gravel, trace (-) Silt, moderate oil-like odor, oil-like blebs observed from 19.5-19.7 feet bgs, wet | 4 | 281 | | Mod | | | |
| 19 | | | | | | | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 7 | 14 13 18 14 | S-11 : Dense, tan/gray (10YR, 4/3) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, wet | | 70 | | Sigt | | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 12 | 10 8 8 7 | S-12 : Medium dense, gray (GLEY, 4/10YR) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | ND | | | SAND | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 5 | 11 13 15 13 | S-13 : Medium dense, gray (GLEY, 4/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | ND | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 17 | 15 14 10 12 | S-14 : Medium dense, gray (GLEY, 4/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | ND | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 9 | 16 16 38 17 | S-15 : Dense, gray (GLEY, 4/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -13.0 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-4 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-302D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-302S
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 16.97
Final Boring Depth (ft.): 15
Date Start - Finish: 5/22/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/11/14 | 13:00 | 9.57 | 8 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-----------------------------------|------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 0-15 | | | | | | : None/Refer to GZ-302D | | | | | | | |
| 1 | | | | | | | 1 | | | | | | ← Road Box |
| 2 | | | | | | | | | | | | | |
| 3 | | | | | | | 2 | | | | Possible Fill/SAND and SILT | | ← PVC Riser |
| 4 | | | | | | | | | | | | | ← Bentonite Seal |
| 5 | | | | | | | | | | | 5 | 12.0 | ← Filter Sand |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | 15 | 2.0 | ← Well Screen |

REMARKS

1 - No sampling completed at this location. See GZ-302D for sampling details. Stratum and impact descriptions inferred from GZ-302D.
 2 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-15 feet bgs; Bentonite Seals installed from 3-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-302S**

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-303D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.78
Final Boring Depth (ft.): 30
Date Start - Finish: 5/22/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 5/30/14 | NM | 6.41 | 1 Day |
| 6/3/14 | NM | 6.38 | 5 days |
| 6/12/14 | 13:30 | 6.39 | 14 days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, dry | 1 2 | ND | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/6) fine SAND, little Silt, trace Gravel, dry | | ND | | | | | ← Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Brown (7.5YR, 5/6) fine SAND, little Silt, trace Gravel, moist | | ND | | | | | ← PVC Riser |
| 4 | S-4 | 6-8 | 24 | 16 | 8 8 6 6 | S-4 : Medium dense, tan (10YR, 6/2) fine to coarse SAND, trace Gravel, trace Silt, wet | | ND | | | | FILL | |
| 5 | S-5 | 8-10 | 24 | 4 | 12 7 7 7 | S-5 : Medium dense, gray (GLE Y 1, 5/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, moderate oil-like odor, slight sheen, wet | 3 | 66 | | Mod | | | |
| 6 | S-6 | 10-12 | 24 | 1 | 15 8 9 8 | S-6 : Medium dense, gray (GLE Y 1, 5/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, moderate oil-like odor, slight sheen, wet | | 51 | | Mod | | | |
| 7 | S-7 | 12-14 | 24 | 15 | 19 20 15 14 | S-7 : Dense, gray (GLE Y 1, 5/10YR) fine to coarse SAND, little (+) Gravel, trace (+) Silt, moderate oil-like odor, slight sheen, wet | | 341 | | Mod | 12 | 1.8 | ← Filter Sand |
| 8 | S-8 | 14-16 | 24 | 9 | 15 11 10 9 | S-8 : Medium dense, gray (GLE Y 1, 5/10YR) fine to coarse SAND, little (+) Gravel, trace (+) Silt, moderate oil-like odor, slight sheen, wet | | 604 | | | | SAND AND SILT | |

REMARKS
 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 6.5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-303D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-303D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 14 | 6 4 4 8 | S-9 : Loose, gray/tan (10YR, 5/1) fine SAND, trace (+) Silt, wet | ND | | Mod | | | | |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 18 | 3 5 4 3 | S-10 : Loose, gray/tan (10YR, 5/1) fine (+) to medium SAND, trace (+) Silt, slight oil-like odor, wet | 6 | | | | 18 | -4.2 | Filter Sand |
| 19 | | | | | | | 4 | | Sigt | | | | Bentonite Seal |
| 20 | S-11 | 20-22 | 24 | 16 | 5 5 5 4 | S-11 : Medium dense, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet | ND | | | | | | Filter Sand |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 18 | 5 6 6 9 | S-12 : Medium dense, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet | ND | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 17 | 11 7 7 10 | S-13 : Medium dense, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet | ND | | | | | | |
| 25 | | | | | | | | | | | 25 | -11.2 | Well Screen |
| 26 | S-14 | 26-28 | 24 | 19 | 5 4 4 5 | S-14 : 0-15" Gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet 15"-19" Tan/gray (10YR, 5/1) fine (+) to medium SAND, trace Silt, wet | ND | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 17 | 6 7 8 11 | S-15 : Medium dense, tan/gray (10YR, 5/1) fine (+) to medium SAND, trace Silt, wet | ND | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -16.2 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-3 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-303D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-303S
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
 Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.78
Final Boring Depth (ft.): 15
Date Start - Finish: 5/22/2014 - 5/28/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/30/14 | NM | 6.65 | 2 Days |
| 6/3/14 | NM | 6.63 | 6 Days |
| 6/11/14 | 14:20 | 6.52 | 14 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 0-15 | | | | | | : None/Refer to GZ-303D | | | | | | | | |
| 1 | | | | | | | 1 | | | | | | | ← Road Box |
| 2 | | | | | | | 2 | | | | | | | |
| 3 | | | | | | | | | | | | | | ← PVC Riser |
| 4 | | | | | | | | | | | | | | ← Bentonite Seal |
| 5 | | | | | | | | | | | | | | ← Filter Sand |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | Mod | | | | | |
| 10 | | | | | | | | | Mod | | | | | |
| 11 | | | | | | | | | Mod | | | | | |
| 12 | | | | | | | | | Mod | | | | | |
| 13 | | | | | | | | | Mod | | 13 | 0.8 | | |
| 14 | | | | | | | | | Mod | | | | | |
| 15 | | | | | | | | | Mod | | 15 | -1.2 | | ← Well Screen |

REMARKS

1 - No sampling completed at this location. See GZ-303D for sampling details. Stratum and impact descriptions inferred from GZ-303D.
 2 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-15 feet bgs; Bentonite Seals installed from 3-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-303S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-304D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MB/SN/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.78
Final Boring Depth (ft.): 30
Date Start - Finish: 5/21/2014 - 5/24/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 6.66 | 5 Days |
| 6/3/14 | NM | 6.50 | 10 Days |
| 6/13/14 | NM | 6.44 | 20 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, dry 6"-24" Black (10YR, 2/1) fine SAND, little Ash, trace Silt, trace Gravel, trace Slag, dry | 1 2 | ND ND | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine SAND, little Ash, trace Silt, trace Gravel, trace Slag, dry | | 0.7 | | | | | ← Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine SAND, little Ash, trace (+) Slag, trace (+) Brick, trace Silt, trace Gravel, moist | | 1 | | | | | |
| 4 | S-4 | 6-8 | 24 | 8 | 1 2 3 1 | S-4 : Very loose, gray (GLEY 1, 4N) fine to coarse SAND, little Silt, trace (+) Gravel, trace Brick, slight Coal tar-like odor, wet | | 13 | | Sigt | | FILL | ← Filter Sand |
| 5 | S-5 | 8-10 | 24 | 12 | 5 5 6 7 | S-5 : Medium dense, tan (2.5YR, 4/2) fine to coarse SAND, little Gravel, trace Silt, trace Brick, strong Coal tar-like odor, wet | | 3 | 48 | | | | |
| 6 | S-6 | 10-12 | 24 | 18 | 5 6 7 7 | S-6 : Medium dense, gray (GLEY 1, 5/10YR) fine to coarse SAND, little (-) Gravel, trace Silt, slight Coal tar-like odor, wet | | 6 | | | | | |
| 7 | S-7 | 12-14 | 24 | 5 | 8 5 7 8 | S-7 : Medium dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (-) Gravel, trace Silt, moderate oil-like and Coal tar-like odor, slight sheen, wet | | 66 | | Strg | | | |
| 8 | S-8 | 14-16 | 24 | 1 | 7 4 2 2 | S-8 : Loose, gray (GLEY 1, 4/N) fine to coarse SAND, strong Coal tar-like odor, Coal tar saturated, wet | | 14 | | Mod | | | |

REMARKS
 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 6.5 feet bgs.
 4 - Coal tar saturated lense observed between 9 and 10 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-304D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:12 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-304D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Depth(ft.) Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 12 | 3 3 3 3 | S-9 : 0-6" Gray (GLEY 1, 5/10Y) fine to coarse SAND, little Silt, trace Silt, wet 6-12" Gray (GLEY 1, 5/10Y) fine SAND, little (+) Silt, wet | | 1.5 | | | | |
| 17 | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 0 | 4 2 1 1 | S-10 : Very loose, no recovery | | NM | | | | |
| 19 | | | | | | | 5 | | | | | |
| 20 | S-11 | 20-22 | 24 | 24 | WOH | S-11 : Very loose, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, trace Shell fragments, wet | | 0.5 | | | 20 | -6.2 |
| 21 | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 24 | 1 WOH 1 1 | S-12 : Very loose, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, trace Shell fragments, wet | | 0.7 | | | | |
| 23 | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 22 | 1 1 1 1 | S-13 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | |
| 25 | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 18 | WOH | S-14 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | |
| 27 | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | WOH | S-15 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -16.2 |
| 31 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |

REMARKS

5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-3 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-304D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:12 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-305S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.89
Final Boring Depth (ft.): 20
Date Start - Finish: 5/21/2014 - 5/22/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 5/29/14 | NM | 6.72 | 7 Days |
| 6/3/14 | NM | 6.77 | 12 Days |
| 6/13/14 | NM | 6.65 | 22 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|---|---------------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1: 0-6" Dark brown (10YR, 3/3) fine SAND and SILT, trace Gravel, trace Roots, dry 6"-24" Black (10YR, 2/1) fine SAND, some Silt, some Ash, trace Gravel, dry | 1 2 | 0.9 4.6 | | | | ← Road Box |
| | | | | | | | | | | | | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2: Black (10YR, 2/1) fine SAND, some Silt, some Ash, trace Gravel, dry | | 0.6 | | | | ← PVC Riser ← Bentonite Seal |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3: Black (10YR, 2/1) fine SAND, some Silt, some Ash, little Brick, trace Gravel, moist | | 0.6 | | | | ← Filter Sand |
| 5 | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 8 | 20 9 9 7 | S-4: Medium dense, gray (GLEY 1, 3/N) fine to coarse SAND, trace Gravel, trace (-) Silt, trace Brick, wet | | 4 | | | | |
| 7 | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 8 | 9 11 12 9 | S-5: Medium dense, gray (GLEY 1, 3/N) fine to coarse (+) SAND, little Gravel, trace Silt, moderate oil-like odor, slight sheen, wet | 3 | 186 | | Mod | | |
| 9 | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 8 | 13 12 4 4 | S-6: 0-4" Gray (GLEY 1, 3/N) fine to coarse (+) SAND, little Gravel, trace Silt, moderate oil-like odor, slight sheen, wet 4"-8" Gray (GLEY 1, 3/N) fine SAND little Silt, moderate oil-like odor, slight sheen, wet | | 142 | | Mod | | ← Well Screen |
| 11 | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 14 | 12 10 26 26 | S-7: Dense, gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace Silt, moderate oil-like odor, slight sheen, wet | | 85 | | Mod | | |
| 13 | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 9 | 26 19 26 16 | S-8: Dense, gray (GLEY 1, 2.5/N) fine to coarse SAND, little (-) Gravel, trace Silt, slight oil-like odor, wet | | 2 | | | | |
| 15 | | | | | | | | | | | | |

REMARKS
 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-305S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:13 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-305S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 8 | 5 5 | S-9 : 0-2" Gray (GLEY 1, 2.5/N) fine to coarse SAND, little (-) Gravel, trace Silt, slight oil-like odor, wet | 4 | 0.5 | | Sigt | FILL | -4.1 | ← Filter Sand |
| 17 | | | | | 5 5 | | | | | | 2"-8" Gray (GLEY 1, 4/N) fine SAND, little (+) Silt, trace Shell, wet | | |
| 18 | S-10 | 18-20 | 24 | 20 | 2 2 | S-10 : Loose, gray (GLEY 1, 4/N) fine SAND, little (+) Silt, trace Shell, wet | | | | | SAND AND SILT/POSSIBLE ORGANIC SILT | | |
| 19 | | | | | 2 2 | | | | | | | | |
| 20 | | | | | | End of exploration at 20 feet. | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS
4 - 5 feet of casing was lost in the borehole from 9 to 14 feet bgs. The boring was aborted and resumed two feet to the north of the original location. The location was excavated via vacuum prior to resuming.
5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-20 feet bgs; Bentonite Seals installed from 2-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-305S**

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-306S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.90
Final Boring Depth (ft.): 20
Date Start - Finish: 5/21/2014 - 5/22/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/19/14 | NM | 6.50 | 7 Days |
| 6/3/14 | NM | 6.56 | 12 Days |
| 6/13/14 | NM | 6.47 | 22 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|---|---------------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, dry 6"-24" Black (10YR, 2/1) fine SAND, some Ash, little Silt, trace Gravel, dry | 1 2 | ND 10 | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine SAND, some Ash, little Silt, trace Gravel, trace Brick, trace glass, dry | | 32 | | | | ← PVC Riser ← Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine SAND, some Ash, little Silt, trace Gravel, trace Brick, trace glass, dry | | 9 | | | | ← Filter Sand |
| 4 | S-4 | 6-8 | 24 | 12 | 41 11 23 24 | S-4 : Dense, gray (GLEY 1, 2.5/N) fine to coarse SAND, trace Gravel, trace Silt, slight oil-like odor, slight sheen, wet, 4" lense of coal tar saturation present at 7.5 feet bgs with Coal tar-like odor | | 191 | Mod | | FILL | |
| 5 | S-5 | 8-10 | 24 | 16 | 20 6 5 6 | S-5 : Medium dense, gray (GLEY 1, 2.5/N) fine to coarse SAND, trace Gravel, trace Silt, slight sheen, slight oil-like odor, wet | 3 | 637 | Sigt | | | |
| 6 | S-6 | 10-12 | 24 | 12 | 4 4 5 4 | S-6 : Loose, gray (GLEY 1, 2.5/N) fine (+) to coarse SAND, little Silt, slight sheen, slight oil-like odor, wet | | 132 | Sigt | | | ← Well Screen |
| 7 | S-7 | 12-14 | 24 | 15 | 6 6 10 8 | S-7 : Medium dense, gray (GLEY 1, 2.5/N) fine (+) to coarse SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet | | 47 | Sigt | | | |
| 8 | S-8 | 14-16 | 24 | 9 | 13 6 2 1 | S-8 : 0-4" Gray (GLEY 1, 2.5/N) fine (+) to coarse SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet 4"-9" Gray (GLEY 1, 4/N) fine SAND, some Silt, | | 11 | Sigt | | | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-306S**

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE: 12/28/2015; 2:41:15 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-306S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|-------------------------------------|-------------|----------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 6 | 5 16 9 3 | S-9 : 0-3" Gray (GLEY 1, 4/N) fine SAND, some Silt, wet 3"-6" Gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace Silt, wet | | 2 | | | FILL | 16 -4.1 | <p>← Filter Sand</p> |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 22 | 2 1 2 1 | S-10 : Very loose, gray (GLEY 1, 4/N) fine SAND, some (+) Silt, wet | | 0.4 | | | SAND AND SILT/POSSIBLE ORGANIC SILT | | |
| 19 | | | | | | | 4 | | | | | | |
| 20 | | | | | | End of exploration at 20 feet. | | | | | | 20 -8.1 | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
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| 30 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-20 feet bgs; Bentonite Seals installed from 2-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-306S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-307S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.7
Final Boring Depth (ft.): 20
Date Start - Finish: 5/19/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 5/29/14 | NM | 4.65 | 10 Days |
| 6/3/14 | NM | 4.84 | 15 Days |
| 6/6/14 | NM | 4.82 | 18 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-2" Black (10YR, 2/1) ASPHALT 2"-8" Brown (10YR, 5/6) fine to medium SAND, trace Gravel, trace Silt, dry 8"-24" Black (10YR, 2/1) fine to medium SAND, little Ash, trace Coal, trace Slag, dry | 1 | NM | | | Road Box | |
| | | | | | | | 2 | ND | | | | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Pale brown (10YR, 6/3) fine SAND, some Silt, trace Gravel, moist | | | | | Bentonite Seal PVC Riser Filter Sand | |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Dark gray (10YR, 4/2) fine SAND and SILT, trace Gravel, moderate oil-like odor, wet | | 506 | | Mod | | |
| 5 | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 12 | 1 1 1 2 | S-4 : Dark gray (10YR, 4/2) fine to coarse SAND, some Silt, little Gravel, slight sheen, oil-like saturation, moderate to strong oil-like odor, wet | | 334 | | Strg | FILL | |
| 7 | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 8 | 1 1 1 1 | S-5 : Dark gray (10YR, 4/2) fine to coarse SAND, little Silt, little Gravel, sheen oil-like coating and bands of saturation, strong oil-like odor, wet | 3 | 487 | | Strg | | Well Screen |
| 9 | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 6 | 2 3 1 1 | S-6 : Dark gray (10YR, 4/2) fine to coarse SAND, little Silt, little Gravel, sheen oil-like coating and bands of saturation, strong oil-like odor, wet | | 717 | | Strg | | |
| 11 | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 8 | 5 3 3 1 | S-7 : Dark gray (10YR, 4/2) fine to coarse SAND, little (+) Gravel, trace (+) Silt, sheen, moderate oil-like odor, oil-like coating and bands of saturation, wet | | 438 | | Strg | | |
| 13 | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 8 | 5 4 6 5 | S-8 : Dark gray (10YR, 4/2) fine to coarse SAND, little (+) Gravel, trace (+) Silt, sheen, moderate oil-like odor, oil-like cocating and bands saturation, wet | | 408 | | | | |
| 15 | | | | | | | | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-307S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:16 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-307S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Depth(ft.) Description Elev.(ft.) | Equipment Installed | |
|------------|--------|-------------|-----------|-----------|-----------------|--|-------------|-----------------|--------|------|---|---------------------|---------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 14 | 1 1 | S-9 : 0-6" Gray (10YR, 4/1) fine SAND and SILT, little Gravel, wet, slight oil-like odor 6"-10: Black (10YR, 2/1) fine to medium SAND, some Silt, trace Gravel, trace wood, trace Organics, wet 10"-14" Gray (10YR, 5/1) fine SAND, some Silt, trace Shells, trace Organics, wet | 156 20 4 | | | Strg | 16 | FILL -5.3 | ← Filter Sand |
| 17 | | | | | 1 1 | | | | | | SAND AND SILT/POSSIBLE ORGANIC SILT | | |
| 18 | S-10 | 18-20 | 24 | 10 | 5 3 | S-10 : Gray (10YR, 5/1) fine SAND, some Silt, trace Shells, trace Organics, wet | ND | | | | | 20 | -9.3 |
| 19 | | | | | 2 2 | | | | | | | | |
| 20 | | | | | | End of exploration at 20 feet. | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS
4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 13 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-3 feet bgs; Filter Sand placed in annulus from 2-20 feet bgs; Bentonite Seals installed from 1-2 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox. Well was installed on 5/19/14 using hollow stem augers. Well installed three feet to the north of the boring location.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-307S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:17 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-308S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 19.71
Final Boring Depth (ft.): 22
Date Start - Finish: 5/19/2014 - 6/4/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 2.76 | 10 Days |
| 6/3/14 | NM | 2.98 | 15 Days |
| 6/6/14 | NM | 2.97 | 18 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-----------------------------------|--|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-3" Black (10YR, 2/1) ASPHALT 3"-24" Dark brown (10YR, 2.2) fine to medium SAND, little Gravel, trace Ash, trace Silt, dry | 1 2 | NM 0.1 | | | | ← Road Box ← Bentonite Seal ← PVC Riser ← Filter Sand |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Brown (10YR, 4/3) fine SAND, little Silt, trace Gravel, moist | | 0.9 | | | | |
| 3 | S-3 | 4-6 | 24 | 0 | 1 2 1 2 | S-3 : Loose soils-no recovery | | NM | | | | |
| 4 | S-4 | 6-8 | 24 | 7 | 4 2 1 2 | S-4 : Loose, dark gray (10YR, 4/1) fine to coarse SAND, little Gravel, little (+) Silt, wet, sheen, bands of oil saturation, moderate to strong oil-like odor | | 536 | | Strg | | |
| 5 | S-5 | 8-10 | 24 | 0 | 6 4 3 2 | S-5 : Loose soils-no recovery, sheen on spoon | 3 | NM | | | FILL | ← Well Screen |
| 6 | S-6 | 10-12 | 24 | 0 | 2 1 2 1 | S-6 : Loose soils-no recovery, sheen on spoon | | NM | | | | |
| 7 | S-7 | 12-14 | 24 | 12 | 4 2 1 2 | S-7 : Loose, dark gray (10YR, 4/1) fine to medium SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | | 53 | | Sigt | | |
| 8 | S-8 | 14-16 | 24 | 0 | 3 2 1 2 | S-8 : Loose soils-no recovery, sheen on spoon | | NM | | | | |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-308S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-308S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|----------------------------|-------------|----------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 20 | 4 2 1 2 | S-9 : Loose, gray (10YR, 5/2) SAND and SILT, trace Organics, trace Shells, wet | | 27 | | | FILL | 3.7 | <p>← Filter Sand</p> |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 3 | 2 2 5 6 | S-10 : Loose, gray (10YR, 5/2) SAND and SILT, trace Organics, trace Shells, wet | | 13 | | | ORGANIC SILT/SAND AND SILT | | |
| 19 | | | | | | | 4 | | | | | | |
| 20 | S-11 | 20-22 | 24 | 24 | 3 2 3 5 | S-11 : Loose, gray (10YR, 5/2) SILT and SAND, trace Organics, trace Shells, trace wood, trace Fibers, wet | | 7 | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | End of exploration at 22 feet. | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 12 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-2 feet bgs; Filter Sand placed in annulus from 2-22 feet bgs; Bentonite Seals installed from 0.5-1.5 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox. Well was installed on 5/19/14 using hollow stem augers. Well was installed approximately five feet to the south of the boring location.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-308S

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-309D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.51
Final Boring Depth (ft.): 30
Date Start - Finish: 5/19/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 2.73 | 9 Days |
| 6/16/14 | NM | 4.11 | 17 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-3" Black (10YR, 2/1) ASPHALT 3"-24" Dark gray (10YR, 4/1) fine to medium SAND, trace Gravel, trace Silt, trace Ash, dry | 1 2 | NM 0.2 | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/4) fine SAND, some Silt, trace Gravel, dry | | 0.3 | | | | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Yellow brown (10YR, 5/4) fine SAND, some Silt, trace Gravel, dry | | 0.3 | | | | | |
| 4 | S-4 | 6-8 | 24 | 14 | 4 2 1 1 | S-4 : Loose, gray (10YR, 4/2) fine SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | | 263 | Mod | | | | |
| 5 | S-5 | 8-10 | 24 | 15 | 1 4 4 2 | S-5 : Loose, gray (10YR, 4/2) fine SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | 3 | 281 | Mod | | | | |
| 6 | S-6 | 10-12 | 24 | 1 | 4 2 1 1 | S-6 : Loose, black (10YR, 2/1) fine SAND, little Silt, little Gravel, little Coal, wet, oil-like staining, slight oil-like odor | | 90 | Sigt | | | | |
| 7 | S-7 | 12-14 | 24 | 3 | 1 1 1 1 | S-7 : Very loose, black (10YR, 2/1) fine SAND, little Silt, little Gravel, little Coal, wet, oil-like staining | | 10 | | | | | ← Filter Sand |
| 8 | S-8 | 14-16 | 24 | 15 | 4 2 3 1 | S-8 : Loose, gray (10YR, 4/1) fine to Medium SAND, little Silt, little Gravel, wet | | 7.1 | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-309D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:20 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-309D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth(ft.) | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|------------|---------------------|------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 4 | 1 1 1 1 | S-9 : very loose, gray (10YR, 4/2) fine to coarse SAND, little Gravel, trace (+) Silt, wet, slight oil-like odor | | | | | | FILL | | ← Filter Sand |
| 17 | | | | | | | | | | Sigt | | | | |
| 18 | S-10 | 18-20 | 24 | 15 | 2 1 1 2 | S-10 : Very soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Roots, trace Shells, wet | | | | | 18 | -7.5 | | ← Bentonite Seal |
| 19 | | | | | | | 4 | | | | | | | ← Filter Sand |
| 20 | S-11 | 20-22 | 24 | 18 | 1 2 1 1 | S-11 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 2 1 1 2 | S-12 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 20 | 1 1 1 1 | S-13 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | ORGANIC SILT | | |
| 25 | | | | | | | | | | | | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 20 | 2 1 1 1 | S-14 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 20 | 1 1 1 1 | S-15 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -19.5 | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-309D**

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-310
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.76
Final Boring Depth (ft.): 30
Date Start - Finish: 5/25/2014 - 5/28/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|--------|-------------|---|------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Light brown (10YR, 4/2) fine to coarse SAND, some Gravel, trace (+) Silt, trace Brick, trace Asphalt, trace Concrete, dry | 1 2 | ND | | | | | | No Equipment Installed |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) fine to coarse SAND, little Gravel, trace Silt, trace Brick, trace Ash, trace Slag, moist | | ND | | | | | | |
| 3 | S-3 | 4-6 | 24 | 0 | 6 8 8 2 | S-3 : Medium dense, granular soils-no recovery | | NM | | | | FILL | | |
| 4 | S-4 | 6-8 | 24 | 12 | 5 4 3 2 | S-4 : 0-2" Black (10YR, 2/1) WOOD, wet, slight coal tar-like odor, slight sheen, stained 2"-12" Blue (GLEYS, 5/5) SILT and SAND, trace Wood, wet | | 40 13 | | Slight | | | | |
| 5 | S-5 | 8-10 | 24 | 24 | 6 18 7 20 | S-5 : 0-12" Black (10YR, 2/1) SAND and SILT, little Organics, trace Wood, trace Gravel, wet, slight coal tar-like odor, coal tar bands of saturation 12"-24" Gray (10YR, 4/1) fine to medium SAND, little Silt, trace Gravel, trace Organics, wet, slight coal tar-like odor | 3 | 201 106 | | Slight | | | | |
| 6 | S-6 | 10-12 | 24 | 18 | 4 1 1 1 | S-6 : Loose, gray (10YR, 5/1) fine to medium SAND, some Silt, trace Gravel, trace Organics, wet | | 1 | | | 10 | -0.2 | | |
| 7 | S-7 | 12-14 | 24 | 0 | 1 1 1 1 | S-7 : Loose, granular soils-no recovery | | NM | | | | Possible FILL/POSSIBLE ORGANIC SILT | | |
| 8 | S-8 | 14-16 | 24 | 14 | 1 1 1 1 | S-8 : Loose, gray (10YR, 5/1) fine to medium SAND, some Silt, trace Gravel, trace Organics, wet | | 1 | | | | | | |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-310

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:21 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-310
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|-------------------------------------|--------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 24 | 1 1 1 1 | S-9 : 0-20" Gray (10YR, 5/1) fine to medium SAND, some Silt, trace Gravel, trace Organics, wet 20"-24" Black (10YR, 2/1) fine to medium SAND, little Silt, little Organics, trace Gravel, wet | | 1 3.5 | | | Possible FILL/POSSIBLE ORGANIC SILT | | |
| 17 | | | | | | | | | | | 17 | -7.2 | |
| 18 | S-10 | 18-20 | 24 | 24 | 1 1 1 1 | S-10 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | |
| 19 | | | | | | | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 12 | 1 1 1 1 | S-11 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 18 | 1 1 1 1 | S-12 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 24 | 1 1 1 1 | S-13 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | ORGANIC SILT | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 24 | 1 1 1 1 | S-14 : Soft, dark gray (10YR, 4/1), ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | 1 1 1 1 | S-15 : Soft, dark gray (10YR, 4/1), ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -20.2 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-310

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-311D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.03
Final Boring Depth (ft.): 30
Date Start - Finish: 5/19/2014 - 5/21/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 5/29/14 | NM | 4.74 | 8 Days |
| 6/6/14 | 10:08 | 4.89 | 16 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------------|-----------------|--------|------|-------------|---------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10YR, 4/4) GRAVEL, some fine to medium Sand, trace Silt, dry | 1 2 | ND | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) GRAVEL, some fine to medium Sand, some Slag, trace Silt, moist | | ND | | | | | |
| 4 | S-3 | 4-6 | 24 | 12 | 14 10 11 11 | S-3 : Medium dense, gray brown (10YR, 4/2) fine to coarse SAND, some (+) Gravel, little Slag, trace (+) Silt, Wet | | ND | | | | | |
| 6 | S-4 | 6-8 | 24 | 12 | 14 11 13 9 | S-4 : Medium dense, gray brown (10YR, 4/2) fine to coarse SAND, some (+) Gravel, little Slag, trace (+) Silt, Wet | | ND | | | | | |
| 8 | S-5 | 8-10 | 24 | 20 | 1 1 2 1 | S-5 : Loose, gray (10YR, 5/2) fine to medium SAND, little Gravel, little Silt, trace Slag, wet | 3 | 10.4 | | | | | |
| 10 | S-6 | 10-12 | 24 | 20 | 1 1 1 1 | S-6 : 0-10" Black (10YR, 2/1) fine SAND and SILT, some Organics, slight oil-like odor, wet 10"-20" Gray (10YR, 6/2) fine SAND and SILT, trace Gravel, slight to moderate blue staining, slight oil-like odor, wet | 12.2 16.5 | | | | 10 0.0 | | |
| 12 | S-7 | 12-14 | 24 | 12 | 1 1 3 3 | S-7 : Very loose, gray (10YR, 4/1) fine SAND and SILT, trace Gravel, slight blue staining, slight oil-like odor, wet | 6.8 | | | | | | |
| 14 | S-8 | 14-16 | 24 | 16 | 8 27 20 11 | S-8 : Dense, gray black (10YR, 3/1) fine to medium SAND, some Silt, little Gravel, trace Roots, slight oil-like odor, wet | 49 | | | | | | |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-311D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-311D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|--------|-------------------------------------|-------------|-----------------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 6 | 5 4 4 5 | S-9 : Loose, gray (10YR, 4/2) fine SAND and SILT, trace Gravel, trace Roots, wet, Slight oil-like odor | | 23.5 | | Slight | | | |
| 17 | | | | | | | | | | | Possible FILL/POSSIBLE ORGANIC SILT | | ← Bentonite Seal ← Filter Sand |
| 18 | S-10 | 18-20 | 24 | 10 | 3 1 2 3 | S-10 : Very loose, black (10YR, 2/1) fine SAND and SILT, trace Gravel, trace Roots, wet, slight oil-like odor | | 10 | | Slight | | | |
| 19 | | | | | | | 4 | | | | | | ← Filter Sand |
| 20 | S-11 | 20-22 | 24 | 1 | 4 1 1 2 | S-11 : 0-3" Black (10YR, 2/1) ORGANIC SILT, trace Gravel, trace Roots, wet, slight oil-like odor 3"-4" Gray (10YR, 4/2) ORGANIC SILT, wet | | 1.2 ND | | Slight | | 20 -10.0 | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 8 | 1 2 1 3 | S-12 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, wet | | ND | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 22 | 1 1 1 1 | S-13 : Very soft, gray (10 YR 4/2) ORGANIC SILT, trace Gravel, trace Shells, wet | | ND | | | | | |
| 25 | | | | | | | | | | | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 26 | 3 1 2 3 | S-14 : Very soft, gray (10 YR 4/2) ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | 1 1 1 1 | S-15 : Very soft, gray (10 YR 4/2) ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | | 30 -20.0 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 18-30 feet bgs; Bentonite Seals installed from 16-18 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-311D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-312D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 8.55
Final Boring Depth (ft.): 30
Date Start - Finish: 5/23/2014 - 5/23/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 5/29/17 | NM | 4.59 | 6 Days |
| 6/6/14 | 10:15 | 4.61 | 14 Days |
| 6/10/14 | 8:05 | 4.16 | 18 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10YR, 4/4) fine to coarse SAND, little Gravel, trace (+) Silt, trace Brick, trace Roots, dry | 1 2 | ND | | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) fine to coarse SAND, little Gravel, trace (+) Silt, trace (+) Ash, trace Brick, trace Slag, moist | | ND | | | | FILL | | Bentonite Seal |
| 3 | | | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | 24 | 7 | 7 4 1 2 | S-3 : Loose, tan (10YR, 4/1) fine (+) to coarse SAND< little (-) Silt, trace (-) Gravel, slight oil-like odor, wet | | 15 | | Sigt | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 8 | 3 3 3 3 | S-4 : Loose, gray (GLE Y 1, 3/10Y) fine (+) to coarse SAND, little Silt, trace (-) Gravel, moderate oil-like odor, slight sheen, wet | | 955 | | Mod | 6 | 2.6 | | PVC Riser |
| 7 | | | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 0 | 6 2 1 1 | S-5 : No recovery, loose granular soil | 3 | NM | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 0 | WOH 1 1 | S-6 : No recovery, loose granular soil | | NM | | | | Possible FILL | | |
| 11 | | | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 4 | 3 4 4 3 | S-7 : Loose, gray (GLE Y 1, 3/N) fine SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet | | 33 | | Sigt | | | | Bentonite Seal |
| 13 | | | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 10 | 5 6 6 3 | S-8 : 0-6" Gray (GLE Y 1, 3/N) fine SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet | | 7 | | Sigt | | | | |
| 15 | | | | | | 6"-10" Gray (GLE Y 1, 4/N) fine SAND, little Silt, | | | | | 15 | -6.5 | | |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-312D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:24 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-312D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|--------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 18 | WOH 1 2 | S-9 : Very soft, gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 3 | | Slight | ORGANIC SILT | 22 -13.5 | Filter Sand |
| 17 | | | | | | | | | | Slight | | | |
| 18 | S-10 | 18-20 | 24 | 16 | 1 1 1 3 | S-10 : Very soft, gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, wet | | 1.2 | | | | | |
| 19 | | | | | | | 4 | | | | | | |
| 20 | S-11 | 20-22 | 24 | 16 | 1 1 1 3 | S-11 : Very soft, gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, wet | | 0.4 | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 3 6 6 7 | S-12 : 0-5" Gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, wet 5"-20" Gray (GLEY 1, 4/N) fine to coarse SAND, little (+) Silt, trace Gravel, trace Shells, wet | | 0.2 | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 6 | 21 24 13 13 | S-13 : Dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (+) Gravel, trace Silt, wet | | 0.4 | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 5 | 9 8 8 11 | S-14 : Medium dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (+) Gravel, trace Silt, wet | | 0.2 | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 10 | 15 13 12 14 | S-15 : Medium dense, tan (10YR, 5/6) fine to coarse SAND, little (+) Gravel, trace (+) Silt, wet | | 0.6 | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 14-30 feet bgs; Bentonite Seals installed from 1-2 and 13-14 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-312D**

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-312S
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 8.55
Final Boring Depth (ft.): 13
Date Start - Finish: 5/23/2014 - 5/23/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 5/29/14 | NM | 4.07 | 6 Days |
| 6/16/14 | 10:12 | 4.20 | 14 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---------------------------------------|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 0-13 | | | | | | : None/Refer to GZ-312D | 1 | | | | | | | Stand Pipe |
| 1 | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | Bentonite Seal |
| 3 | | | | | | | | | | | | | | PVC Riser |
| 4 | | | | | | | | | | | | | | Filter Sand |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | Sigt | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | Mod | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | 2 | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | Sigt | | | | | Well Screen |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | End of exploration at 13 feet. | | | | | | | | |

REMARKS
1 - No sampling completed at this location. See GZ-312D for sampling details. Stratum and impacts descriptions inferred from GZ-312D.
2 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 13 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-3 feet bgs; Filter Sand placed in annulus from 2-13 feet bgs; Bentonite Seals installed from 1-2 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-312S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:25 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: RCA 12R
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
 Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 17.87
Final Boring Depth (ft.): 15
Date Start - Finish: 5/22/2014 - 5/30/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/3/11 | NM | 10.02 | 4 Days |
| 6/11/14 | 12:20 | 9.93 | 12 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 0-15 | | | | | | : None/Refer to GZ-301D | | | | | | | | |
| 1 | | | | | | | 1 | | | | | | | ← Road Box |
| 2 | | | | | | | 2 | | | | | | | ← PVC Riser |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | ← Bentonite Seal |
| 5 | | | | | | | | | | | | | | ← Filter Sand |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | 14 | 3.9 | | |
| 15 | | | | | | | | | | | 15 | 2.9 | | |

REMARKS

1 - No sampling completed at this location. See GZ-301D for sampling details. Stratum and impacts descriptions inferred from GZ-301D.
 2 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs. Filter Sand placed in annulus from 4-15 feet bgs. Bentonite seals installed from 3-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted road box.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
RCA 12R

**TABLE P-1 - SURFACE SOIL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | D84 | D85 | D86 | D87 | D88 | D89 | D90 | D91 | D92 | D93 | D94 | E84 | E85 | E86 | E90 | E91 | F11 | F23 | F24 | F25 | F29 | F30 | F31 | F37 | F39 | F40 | F41 | F42 | F43 | F44 | F45 | F46 | | |
|--|--------------------------------|---------------|-----------|-------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | | | | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 2/2/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/19/2000 | 0 - 2 FT 1/19/2000 | 0 - 2 FT 1/19/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/6/2000 | 0 - 2 FT 1/7/2000 | 0 - 2 FT 1/7/2000 | 0 - 2 FT 1/7/2000 | 0 - 2 FT 1/10/2000 | 0 - 2 FT 1/7/2000 | 0 - 2 FT 1/10/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/13/2000 |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.12 | |
| Acetone | NE | 7,800 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.34 | ND | ND | ND | ND | ND | ND | 0.098 | ND | ND | ND | ND | 0.032 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Chloroform | NE | 940 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.22 | 0.076 | 0.73 | 1.1 | 1.1 | 1.1 | | | |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.11 | | |
| Methyl tert-Butyl Ether | 100 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.39 | | |
| Naphthalene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 0.88 | ND | ND | ND | ND | ND | ND | ND | ND | 0.044 | ND | ND | ND | ND | ND | ND | ND | ND | 0.26 | ND | ND | ND | ND | ND | 0.3 | | | |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Styrene | 64 | 190 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Trichlorofluoromethane | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.038 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.068 | ND | ND | ND | 0.06 | ND | ND | ND | 0.049 | ND | ND | ND | ND | ND | ND | ND | | |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.035 | ND | ND | ND | ND | ND | ND | 0.049 | ND | ND | ND | ND | ND | ND | ND | | | |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 960 | 480 | 1,700 | 1,000 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 15,000 | 710 | 2,200 | 240 | 2,200 | 780 | | | |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | 0.88 | 0.52 | 1.5 | 0.41 | 1.3 | 0.55 | 0.15 | 0.75 | 1.6 | 0.057 | 0.72 | 1.6 | 4.6 | 0.71 | 1.4 | 0.31 | 0.37 | 0.56 | 0.61 | ND | ND | 0.31 | 0.28 | 0.84 | ND | ND | 2.2 | 0.24 | 2 | 0.96 | 0.19 | 4 | | |
| Antimony | NE | 820 | 10,000 | mg/kg | 0.45 | 0.22 | 0.53 | ND | 0.68 | 0.22 | 0.27 | ND | 0.38 | 0.23 | 0.27 | ND | 0.23 | ND | ND | ND | ND | ND | ND | ND | 0.95 | 0.33 | 1 | ND | ND | ND | ND | ND | ND | ND | 0.34 | | | |
| Arsenic | NE | 7 | 10,000 | mg/kg | 7.3 | 6.4 | 9.1 | 9 | 8 | 8.6 | 6.2 | 4.9 | 6.3 | 7.2 | 3.7 | 4.9 | 6.8 | 14.1 | 2.9 | 3.8 | 3.1 | 4 | 4.3 | 2.6 | 4.8 | 6.3 | 4.6 | 5.9 | 4.5 | 5.1 | 9.1 | 6 | 27.3 | 4.2 | 1.7 | 11.3 | | |
| Barium | NE | 10,000 | 10,000 | mg/kg | 30.4 | 27.1 | 32.4 | 28.9 | 31.5 | 29.3 | 26 | 19.8 | 28 | 48.2 | 76.4 | 115 | 110 | 75 | 29.2 | 43 | 30.5 | 31.1 | 39.1 | 30.1 | 11.6 | 42.6 | 28.9 | 28.9 | 28.8 | 27.4 | 251 | 50.1 | 75.8 | 64.4 | 18.7 | 43.5 | | |
| Beryllium | NE | 1.5 | 10,000 | mg/kg | 0.53 | 0.4 | 0.62 | 0.69 | 0.59 | 1.4 | 0.45 | 0.27 | 0.32 | 0.3 | 0.57 | 0.41 | 0.53 | 0.34 | 0.3 | 0.52 | 0.35 | 0.39 | 0.41 | 0.72 | 0.34 | 0.53 | 0.38 | 0.47 | 0.38 | 0.43 | 0.59 | 0.37 | 0.54 | 0.42 | 1.1 | 0.46 | | |
| Cadmium | NE | 1,000 | 10,000 | mg/kg | 0.51 | 0.41 | 1.7 | 0.53 | 0.53 | 0.79 | 0.6 | 1.4 | 0.61 | 0.28 | 0.27 | 2.8 | 2.5 | 1.7 | 0.37 | 0.36 | 0.98 | 0.83 | 0.94 | 0.65 | 0.6 | 1.6 | 0.75 | 1.5 | 1.7 | 1.5 | 1.7 | 1.3 | 1.8 | 2.1 | 1.2 | 1.6 | | |
| Chromium | NE | 10,000 | 10,000 | mg/kg | 11.1 | 9.9 | 13.1 | 31.6 | 12.5 | 12.8 | 9.6 | 8.1 | 9.9 | 2.6 | 2.7 | 14 | 18.6 | 14.3 | 8.7 | 27.5 | 5.8 | 10 | 8.2 | 8.8 | 5.3 | 19.8 | 9 | 9.6 | 11.4 | 13.3 | 49.2 | 9.2 | 10.9 | 18 | 4.3 | 14.1 | | |
| Copper | NE | 10,000 | 10,000 | mg/kg | 44.1 | 14 | 23.3 | 30.4 | 28.4 | 20.4 | 17.8 | 13.8 | 30.7 | 9.5 | 7 | 54.7 | 78.3 | 60.6 | 10.6 | 19.9 | 14 | 21.2 | 17 | 20.3 | 10 | 46.8 | 17 | 20.4 | 19.2 | 20.7 | 57.5 | 30.2 | 51.4 | 48.1 | 12.6 | 25.4 | | |
| Iron | NE | NE | NE | mg/kg | 14200 | 14700 | 19800 | 18400 | 17500 | 17900 | 15700 | 11900 | 10900 | 9590 | 8770 | 27800 | 21400 | 16900 | 9520 | 13100 | 12200 | 11600 | 14300 | 10300 | 11200 | 14000 | 12000 | 12000 | 15000 | 12200 | 11600 | 9980 | 12700 | 14200 | 12100 | 13000 | | |
| Lead | NE | 500 | 10,000 | mg/kg | 73 | 14.9 | ND | 18.8 | 13 | 23.1 | 15.3 | 42.3 | 342 | 13.9 | 1.4 | 266 | 242 | 131 | 32.4 | 40.1 | 37.5 | 79.4 | 59.7 | 23.4 | 78.7 | 257 | 55.2 | 77 | 50.9 | 93.8 | 614 | 88.8 | 147 | 241 | 11.7 | 152 | | |
| Mercury | NE | 610 | 10,000 | mg/kg | 0.19 | ND | 0.021 | ND | 0.063 | 0.015 | 0.022 | ND | 0.22 | 0.066 | ND | 0.15 | 0.72 | 0.61 | 0.036 | 0.041 | 0.059 | 0.15 | 0.1 | 0.076 | ND | 0.067 | 0.043 | 0.091 | 0.081 | 0.11 | 0.47 | 0.1 | 0.12 | 0.16 | ND | 0.17 | | |
| Nickel | NE | 10,000 | 10,000 | mg/kg | 31.9 | 14 | 17.8 | 16.8 | 18.7 | 16.6 | 14 | 10.4 | 13.2 | 4.6 | 5.5 | 19.2 | 22.6 | 18.9 | 12.4 | 21.2 | 9.8 | 11 | 10.6 | 11.6 | 9.5 | 17.9 | 12.5 | 11.3 | 15.4 | 12.9 | 12 | 10 | 17.2 | 16.5 | 7.5 | 11.5 | | |
| Selenium | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 22.8 | 22.6 | 15.8 | ND | ND | 6.3 | 5.4 | 7.3 | 3 | ND | 5.9 | ND | 7.1 | 7.6 | 6.5 | 3.6 | 4.7 | 7.5 | 7.7 | 4.8 | 7.9 | | |
| Silver | NE | 10,000 | 10,000 | mg/kg | 2.6 | 2.5 | 2.5 | 3.3 | 3 | 2.3 | 1.8 | 1.4 | 1.2 | 0.84 | 0.59 | 1.9 | 3.2 | 1.2 | 1.7 | 2.2 | 0.91 | 0.79 | 0.73 | 0.36 | 2.2 | 1.1 | 2.2 | 1.2 | 1.2 | 1.5 | 1 | 1.5 | 1.8 | 0.45 | 1.7 | | | |
| Thallium | NE | 140 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| Zinc | NE | 10,000 | 10,000 | mg/kg | 125 | 43.5 | 57 | 42.3 | 52.4 | 55.6 | 48.2 | 886 | 94.4 | 20.3 | 49 | 134 | 125 | 59.3 | 37 | 41.8 | 42.8 | 44.1 | 39 | 37.3 | 36.4 | 108 | 46.2 | 74.1 | 56.6 | 72.4 | 166 | 82.1 | 104 | 153 | 74 | 107 | | |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor 1242 | 10 | 10 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.095 | ND | ND | ND | |
| Aroclor 1248 | 10 | 10 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| Aroclor 1254 | 10 | 10 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.046 | ND | 0.073 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.71 | ND | ND | 0.43 | ND | ND | | |
| Aroclor 1260 | 10 | 10 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.05 | ND | ND | ND | ND | ND | ND | ND | 0.2 | ND | ND | ND | ND | ND | ND | ND | | |
| 4,4-DDD | NE | NE | 10,000 | mg/kg | ND | ND | 0.012 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0059 | ND | ND | ND | 0.16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| 4,4-DDE | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 0.044 | ND | ND | ND | ND | 0.041 | 0.01 | 0.01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.022 | ND | ND | ND | ND | 0.0087 | 0.0099 | 0.022 | 0.046 | | |
| 4,4-DDT | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | 0.0048 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.014 | 0.012 | ND | 0.0076 | ND | ND | ND | 0.05 | 0.016 | ND | ND | ND | ND | 0.045 | 0.023 | 0.049 | 0.049 | | | |

**TABLE P-1 - SURFACE SOIL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | D84 | D85 | D86 | D87 | D88 | D89 | D90 | D91 | D92 | D93 | D94 | E84 | E85 | E86 | E90 | E91 | F11 | F23 | F24 | F25 | F29 | F30 | F31 | F37 | F39 | F40 | F41 | F42 | F43 | F44 | F45 | F46 | | |
|--|--------------------------------|---------------|-----------|-------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | | | | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 2/2/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/28/2000 | 0 - 2 FT 1/19/2000 | 0 - 2 FT 1/19/2000 | 0 - 2 FT 1/19/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/25/2000 | 0 - 2 FT 1/6/2000 | 0 - 2 FT 1/7/2000 | 0 - 2 FT 1/7/2000 | 0 - 2 FT 1/7/2000 | 0 - 2 FT 1/10/2000 | 0 - 2 FT 1/7/2000 | 0 - 2 FT 1/10/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/12/2000 | 0 - 2 FT 1/13/2000 | 0 - 2 FT 1/12/2000 |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| 2,4-Dinitrotoluene | NE | 8.4 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 5.8 | ND | ND | ND | ND | 2.1 | 2 | 2.9 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 0.48 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| 4-Chlorophenylphenylether | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| 4-Methylphenol | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 1.5 | ND | ND | ND | ND | ND | ND | 1.4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 2.2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | 0.39 | 2 | ND | 7.6 | ND | 0.91 | ND | ND | 0.42 | 2.2 | 12 | 0.47 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | 0.74 | ND | 0.82 | 0.75 | 4.1 | 0.66 | 18 | ND | 1.1 | ND | 0.46 | 0.44 | 3.1 | 18 | 0.45 | ND | 0.43 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | 2.7 | ND | 2.3 | 2 | 15 | 2 | 34 | ND | 4.5 | ND | 1.8 | 1.3 | 11 | 30 | 1.8 | 0.57 | 2.3 | ND | 0.76 | 0.43 | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | 2.7 | ND | 1.8 | 1.6 | 13 | 1.7 | 28 | ND | 4 | ND | 1.6 | 1.3 | 8.5 | 21 | 2.3 | 0.7 | 2.4 | ND | 0.59 | ND | ND | NA | ND | 0.93 | 0.76 | ND | 130 | 10 | 40 | 1.3 | 0.98 | 15 | | |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | 2.1 | ND | 2.4 | 1.1 | 11 | 2.5 | 36 | ND | 5.8 | ND | 2.1 | 2.3 | 14 | 31 | 3 | 0.79 | 3.6 | ND | 0.97 | ND | ND | NA | ND | 1.4 | 1.1 | ND | 230 | 16 | 63 | 2.2 | 1.2 | 23 | | |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | 1.5 | ND | 0.71 | 0.82 | 7.4 | 0.82 | 8.4 | ND | 2 | ND | 0.72 | 0.86 | ND | 12 | 1.6 | 0.54 | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | 1.3 | ND | 1.1 | 2 | 12 | 0.76 | 13 | ND | 2.1 | ND | 0.96 | 0.51 | 5.2 | 10 | 1.6 | 0.54 | 1.4 | ND | 0.66 | ND | ND | NA | ND | 0.55 | 0.43 | ND | 74 | 5.6 | 18 | 0.84 | 0.48 | 8.9 | | |
| Bis (2-Ethylhexyl) Phthalate | NE | 410 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.8 | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Carbazole | NE | NE | 10,000 | mg/kg | ND | ND | 0.4 | ND | ND | 0.52 | 14 | ND | 1.1 | ND | ND | ND | 1.7 | 11 | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | 0.48 | ND | 280 | 5.2 | 12 | ND | ND | 6.4 | | |
| Chrysene | NE | 780 | 10,000 | mg/kg | 2.4 | ND | 2.1 | 1.7 | 12 | 2.2 | 27 | ND | 4.5 | ND | 1.6 | 1.5 | 11 | 25 | 1.9 | 0.57 | 2.5 | ND | 0.8 | 0.47 | ND | NA | ND | 0.96 | 0.89 | ND | 190 | 11 | 39 | 1.4 | 1 | 22 | | |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | ND | ND | ND | ND | 2.1 | ND | 2.8 | ND | 0.54 | ND | ND | ND | 4.3 | 0.45 | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | 24 | 1.9 | 2.3 | ND | ND | ND | | | |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 6.3 | ND | ND | ND | ND | 0.47 | 1.2 | 8.4 | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 7.4 | | |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | 5.8 | ND | 4.5 | 3.5 | 30 | 4.3 | 48 | 0.39 | 8.6 | ND | 2.7 | 1.5 | 24 | 58 | 3.5 | 0.97 | 4.2 | 0.64 | 1.2 | 0.96 | ND | NA | ND | 1.9 | 2.5 | ND | 610 | 27 | 99 | 2.4 | 2.1 | 38 | | |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | ND | ND | 0.41 | ND | 0.63 | ND | 11 | ND | ND | ND | ND | 1.6 | 18 | ND | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | 180 | 1.3 | 14 | ND | ND | 12 | | |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | 1.6 | ND | 0.88 | 0.5 | 7.2 | 1 | 8.4 | ND | 2.3 | ND | 0.85 | 0.94 | ND | 13 | 1.6 | 0.51 | ND | ND | 0.42 | ND | ND | NA | ND | 0.6 | 0.37 | ND | 72 | 5.5 | 21 | 0.77 | 0.56 | 7.8 | | |
| Isophorone | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | 0.97 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.83 | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 12 | ND | ND | ND | ND | 1.8 | 2.2 | 3.1 | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | 800 | 0.6 | 13 | ND | 0.64 | 17 | | | |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | 2.3 | ND | 3.7 | 2.8 | 9.5 | 2 | 56 | ND | 5.7 | ND | 1.6 | 1.7 | 15 | 71 | 1.8 | 0.48 | 2.5 | 0.4 | 0.39 | 0.9 | ND | NA | ND | 1.1 | 1.5 | ND | 780 | 15 | 58 | 1.1 | 0.66 | 45 | | |
| Phenol | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.8 | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | 2.1 | ND | ND | ND | ND | ND | ND | | |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | 5 | ND | 4.4 | 2.6 | 23 | 3.6 | 64 | 0.42 | 8.7 | ND | 2.4 | 1.5 | 17 | 44 | 3.3 | 0.92 | 3.9 | 0.51 | 0.89 | 0.77 | ND | NA | ND | 1.3 | 1.6 | ND | 310 | 18 | 63 | 2 | 1.2 | 41 | | |

Notes:
 ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

**TABLE P-1 - SURFACE SOIL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | F47 | F48 | F56 | F57 | VHB SS-1 | VHB SS-7 | VHB SS-8 | GZ-3055 |
|--|--------------------------------|---------------|-----------|-------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|
| | | | | | 0-2 FT 1/13/2000 | 0-2 FT 1/13/2000 | 0-2 FT 1/19/2000 | 0-2 FT 1/19/2000 | 0-0.5 FT 9/5/2001 | 0-0.5 FT 9/5/2001 | 0-0.5 FT 9/5/2001 | 0.5-2 FT 5/21/2014 |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.092 |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.0471 |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | ND |
| Acetone | NE | 7,800 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | ND |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.0415 |
| Chloroform | NE | 940 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.0168 |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.0606 |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | ND |
| Methyl tert-Butyl Ether | 100 | 10,000 | 10,000 | mg/kg | ND | ND | 0.62 | ND | NA | NA | NA | ND |
| Naphthalene | NE | NE | 10,000 | mg/kg | ND | ND | 0.4 | ND | NA | NA | NA | 0.196 |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.028 |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.0258 |
| Styrene | 64 | 190 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.0123 |
| Trichlorofluoromethane | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | ND |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.156 |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | 0.287 |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | 360 | 15,000 | 300 | 400 | NA | NA | NA | 666 |
| Inorganic Compounds | | | | | | | | | | | | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | 0.97 | 4.5 | 1.4 | 0.45 | NA | NA | NA | 5.55 |
| Antimony | NE | 820 | 10,000 | mg/kg | 1.3 | 2.1 | ND | ND | NA | NA | NA | ND |
| Arsenic | NE | 7 | 10,000 | mg/kg | 6.1 | 16.1 | 3.4 | 2.6 | NA | NA | NA | 15.6 |
| Barium | NE | 10,000 | 10,000 | mg/kg | 42.5 | 269 | 31.3 | 34 | NA | NA | NA | NA |
| Beryllium | NE | 1.5 | 10,000 | mg/kg | 0.67 | 0.52 | 0.58 | 0.34 | NA | NA | NA | 0.55 |
| Cadmium | NE | 1,000 | 10,000 | mg/kg | 1 | 2.5 | 2.3 | 1.3 | NA | NA | NA | 0.88 |
| Chromium | NE | 10,000 | 10,000 | mg/kg | 4 | 11.6 | 5.6 | 9.7 | NA | NA | NA | 6.4 |
| Copper | NE | 10,000 | 10,000 | mg/kg | 98 | 676 | 43.8 | 18 | NA | NA | NA | 56.9 |
| Iron | NE | NE | NE | mg/kg | 8850 | 23300 | 11400 | 12400 | NA | NA | NA | NA |
| Lead | NE | 500 | 10,000 | mg/kg | 94.9 | 649 | 81.6 | 54.3 | NA | NA | NA | 135 |
| Mercury | NE | 610 | 10,000 | mg/kg | 0.15 | 0.44 | 0.21 | 0.077 | NA | NA | NA | 0.227 |
| Nickel | NE | 10,000 | 10,000 | mg/kg | 8 | 15.3 | 13.7 | 13.1 | NA | NA | NA | 9.6 |
| Selenium | NE | 10,000 | 10,000 | mg/kg | 3.8 | 15.6 | 10.6 | 9.8 | NA | NA | NA | ND |
| Silver | NE | 10,000 | 10,000 | mg/kg | 0.53 | 1.6 | 0.92 | 0.72 | NA | NA | NA | 0.85 |
| Thallium | NE | 140 | 10,000 | mg/kg | 0.49 | 1.2 | ND | ND | NA | NA | NA | ND |
| Zinc | NE | 10,000 | 10,000 | mg/kg | 98.3 | 180 | 323 | 62.3 | NA | NA | NA | 82.2 |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | | | | |
| Aroclor 1242 | 10 | 10 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA |
| Aroclor 1248 | 10 | 10 | 10,000 | mg/kg | ND | ND | 0.048 | ND | NA | NA | NA | NA |
| Aroclor 1254 | 10 | 10 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA |
| Aroclor 1260 | 10 | 10 | 10,000 | mg/kg | ND | ND | 0.046 | ND | NA | NA | NA | NA |
| 4,4-DDD | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA |
| 4,4-DDE | NE | NE | 10,000 | mg/kg | ND | NA | ND | ND | NA | NA | NA | NA |
| 4,4-DDT | NE | NE | 10,000 | mg/kg | ND | NA | 0.0065 | ND | NA | NA | NA | NA |
| Aldrin | NE | NE | 10,000 | mg/kg | 0.004 | NA | ND | ND | NA | NA | NA | NA |
| alpha-chlordane | NE | NE | 10,000 | mg/kg | ND | NA | ND | ND | NA | NA | NA | NA |
| delta-BHC | NE | NE | 10,000 | mg/kg | 0.0033 | NA | 0.007 | ND | NA | NA | NA | NA |
| Dieldrin | NE | 0.4 | 10,000 | mg/kg | ND | NA | ND | ND | NA | NA | NA | NA |
| Endosulfan I | NE | NE | 10,000 | mg/kg | ND | NA | ND | ND | NA | NA | NA | NA |
| Endosulfan II | NE | NE | 10,000 | mg/kg | ND | NA | ND | ND | NA | NA | NA | NA |
| Endosulfan sulfate | NE | NE | 10,000 | mg/kg | ND | NA | ND | ND | NA | NA | NA | NA |
| Endrin | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA |
| Endrin aldehyde | NE | NE | 10,000 | mg/kg | ND | NA | ND | ND | NA | NA | NA | NA |
| Endrin ketone | NE | NE | 10,000 | mg/kg | ND | NA | 0.011 | ND | NA | NA | NA | NA |
| gamma-Chlordane | NE | NE | 10,000 | mg/kg | 0.0037 | NA | ND | ND | NA | NA | NA | NA |
| Heptachlor | NE | NE | 10,000 | mg/kg | 0.0067 | NA | 0.0079 | ND | NA | NA | NA | NA |
| Heptachlorepoxyde | NE | NE | 10,000 | mg/kg | 0.0043 | NA | 0.0062 | ND | NA | NA | NA | NA |
| Methoxychlor | NE | NE | 10,000 | mg/kg | ND | NA | ND | ND | NA | NA | NA | NA |

Notes:
 ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

**TABLE P-1 - SURFACE SOIL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | F47 | F48 | F56 | F57 | VHB SS-1 | VHB SS-7 | VHB SS-8 | GZ-3055 |
|--|--------------------------------|---------------|-----------|-------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|
| | | | | | 0-2 FT 1/13/2000 | 0-2 FT 1/13/2000 | 0-2 FT 1/19/2000 | 0-2 FT 1/19/2000 | 0-0.5 FT 9/5/2001 | 0-0.5 FT 9/5/2001 | 0-0.5 FT 9/5/2001 | 0.5-2 FT 5/21/2014 |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA |
| 2,4-Dinitrotoluene | NE | 8.4 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | ND | 250 | 2.4 | ND | ND | ND | ND | 0.622 |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | ND | 7.9 | ND | ND | NA | NA | NA | NA |
| 4-Chlorophenylphenylether | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | 10,000 | mg/kg | ND | 17 | ND | ND | NA | NA | NA | NA |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | ND | 27 | 0.55 | ND | ND | ND | ND | ND |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | 0.5 | 150 | 1.1 | ND | ND | ND | 1.3 | 0.612 |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | 0.37 | 230 | 3.1 | ND | ND | 0.08 | 1.9 | 0.525 |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | 3.4 | 330 | 10 | ND | 0.19 | 0.63 | 5.2 | 2.61 |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | 3.5 | 220 | 8.4 | ND | 0.2 | 0.77 | 4.6 | 1.95 |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | 5.2 | 340 | 12 | ND | 0.19 | 4.3 | 8.92 | 3.06 |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | 2.5 | 82 | 3.3 | ND | 0.14 | 0.56 | 3.2 | 1.02 |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | 1.4 | 150 | 4 | ND | 0.19 | 0.67 | 3.8 | 1.34 |
| Bis (2-Ethylhexyl) Phthalate | NE | 410 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA |
| Carbazole | NE | NE | 10,000 | mg/kg | ND | 160 | 1.5 | ND | NA | NA | NA | NA |
| Chrysene | NE | 780 | 10,000 | mg/kg | 3.5 | 300 | 9.1 | ND | 0.24 | 0.96 | 5.8 | 3.23 |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | ND | 41 | ND | ND | 0.05 | 0.21 | 1.5 | 0.451 |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | ND | 160 | 1.2 | ND | NA | NA | NA | NA |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | 4.8 | 690 | 23 | ND | 0.33 | 1.8 | 12 | 3.15 |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | ND | 280 | 1.1 | ND | ND | ND | 0.56 | ND |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | 2.6 | 100 | 4.2 | ND | 0.14 | 0.55 | 3.3 | 0.899 |
| Isophorone | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | 0.56 | 590 | 2.2 | ND | ND | ND | ND | 0.714 |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | 1 | 810 | 12 | ND | 0.13 | 0.72 | 6.5 | 2.36 |
| Phenol | NE | 10,000 | 10,000 | mg/kg | ND | 8.8 | ND | ND | NA | NA | NA | NA |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | 2.6 | 580 | 14 | ND | 0.29 | 1.3 | 8 | 2.53 |

Notes:
 ND - Not Detected NE - Not Established R - sample rejected by
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Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM GB Upper Concentration Limits

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**TABLE P-2 - SUBSURFACE SOIL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | RCA-1 6-9 FT 1994 | RCA-2 | | RCA-12 | | D84 4-6 FT 1/25/2000 | D85 4-6 FT 1/25/2000 | D86 2-4 FT 2/2/2000 | D87 4-6 FT 1/25/2000 | D88 2-4 FT 1/25/2000 | D89 2-4 FT 1/28/2000 | D90 2-4 FT 1/28/2000 | D91 2 - 4 FT 1/28/2000 | D92 2 - 4 FT 1/28/2000 | D93 4 - 6 FT 1/28/2000 | D94 4 - 6 FT 1/28/2000 | Test Pit D87A 9/12/2000 4.5 FT | Test Pit D87B 9/12/2000 4.5 FT | E84 2-4 FT 1/19/2000 | E85 2-4 FT 1/19/2000 | E86 2-4 FT 1/19/2000 |
|--|--------------------------------|---------------|-----------|-------|-------------------------|----------------|----------------|----------------|----------------|----------------------------|----------------------------|---------------------------|----------------------------|----------------------------|----------------------------|----------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------------------------------|--------------------------------------|----------------------------|----------------------------|----------------------------|
| | | | | | | 4-6 FT | 20-22 FT | 6-8 FT | 8-10 FT | | | | | | | | | | | | | | | | |
| | | | | | | September 1994 | September 1994 | September 1994 | September 1994 | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.8 | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| 2-Butanone | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Carbon Disulfide | NE | NE | 10,000 | mg/kg | ND | ND | 0.05 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Chloroform | NE | 940 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | 28 | 1.2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Isopropylbenzene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | 0.59 | ND | ND | ND | 0.81 | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Methyl tert-Butyl Ether | 100 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | ND | ND | 0.04 | 0.01 | 0.01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | 1.2 | ND | ND | 3 | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | 0.37 | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| sec-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | 0.55 | ND | ND | 0.95 | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Styrene | 64 | 190 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| tert-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Tetrachloroethane | 4.2 | 110 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | 0.59 | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Trichlorofluoromethane | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | 110 | 3.7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | NA | 13,900 | NA | NA | NA | ND | ND | ND | 9300 | ND | ND | ND | ND | ND | ND | ND | 7730 | 175 | 1,600 | 1,200 | 7,200 |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | 1.4 | 1.3 | 261 | 79.2 | 2 | 0.18 | 2.7 | 0.92 | 0.51 | 0.47 | 0.24 | NA | NA | 2.3 | 9.2 | 7.6 |
| Antimony | NE | 820 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | NE | 7 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Beryllium | NE | 1.5 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | NE | 1,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chromium | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Copper | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Iron | NE | NE | NE | mg/kg | NA | NA | NA | NA | NA | 11200 | 15300 | 6470 | 16200 | 14700 | 16700 | 13500 | 10800 | 9820 | 10900 | 4600 | NA | NA | 14,200 | 37,600 | 50,300 |
| Lead | NE | 500 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Mercury | NE | 610 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Nickel | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Silver | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Thallium | NE | 140 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor 1242 | 10 | 10 | 10,000 | mg/kg | NA | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Aroclor 1260 | 10 | 10 | 10,000 | mg/kg | NA | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

Notes:
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 NA - Not Analyzed N/A - Not Applicable the lab

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NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | RCA-1 | RCA-2 | | RCA-12 | | D84 | D85 | D86 | D87 | D88 | D89 | D90 | D91 | D92 | D93 | D94 | Test Pit D87A | Test Pit D87B | E84 | E85 | E86 | | | |
|--|--------------------------------|---------------|-----------|-------|------------|----------------|----------|----------------|---------|------------|-----------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|---------------|---------------|------------|-----------|------------|-----------|-----------|-----------|
| | | | | | 6-9 FT | 4-6 FT | 20-22 FT | 6-8 FT | 8-10 FT | 4-6 FT | 4-6 FT | 2-4 FT | 4-6 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT | 2-4 FT |
| | | | | | 1994 | September 1994 | | September 1994 | | 1/25/2000 | 1/25/2000 | 2/2/2000 | 1/25/2000 | 1/25/2000 | 1/28/2000 | 1/28/2000 | 1/28/2000 | 1/28/2000 | 1/28/2000 | 1/28/2000 | 1/28/2000 | 1/28/2000 | 1/28/2000 | 4.5 FT | 4.5 FT | 1/19/2000 | 1/19/2000 | 1/19/2000 |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4-Dichlorophenol | NE | 6100 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.83 | ND | ND | ND | ND | NA | NA | ND | ND | ND | | | |
| 2,4-Dimethylphenol | NE | 10000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND | | | |
| 2,4-Dinitrotoluene | NE | 8.4 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND | | | |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | ND | 18.8 | ND | ND | ND | ND | ND | ND | 0.82 | ND | ND | 6.2 | ND | ND | ND | ND | NA | NA | 1.8 | 14 | 8.9 | | | |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | 0.65 | 0.48 | | | |
| 4-Chloroaniline | NE | 8200 | 10,000 | mg/kg | ND | 2.4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND | | | |
| 4-Methylphenol | NE | NE | 10,000 | mg/kg | ND | 3.9 | ND | ND | ND | ND | ND | ND | ND | 0.38 | ND | ND | ND | ND | ND | ND | NA | NA | ND | 1.9 | 1.2 | | | |
| 4-Nitroaniline | NE | 8200 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND | | | |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | 140 | ND | ND | ND | ND | ND | ND | ND | 1.6 | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND | | | |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | 220 | 4 | ND | ND | ND | ND | ND | 0.97 | 5.7 | 1.2 | ND | ND | ND | ND | ND | ND | NA | NA | 1.4 | 15 | 16 | | | |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | 580 | 20.1 | ND | ND | ND | ND | ND | 1.3 | 11 | 3.1 | ND | 0.72 | ND | ND | ND | ND | NA | NA | 1.6 | 20 | 18 | | | |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | 650 | 10.2 | ND | ND | ND | 1.1 | ND | 6.9 | 33 | 7.7 | 0.67 | 0.5 | ND | ND | 0.42 | ND | NA | NA | 2.8 | 29 | 42 | | | |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | 370 | 8.4 | ND | ND | ND | 1.1 | ND | 6.4 | 28 | 6.4 | 0.5 | 0.46 | ND | ND | ND | ND | NA | NA | 2.4 | 22 | 38 | | | |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | 460 | 13.5 | ND | ND | ND | 1.6 | ND | 8.8 | 39 | 7.9 | 0.6 | 0.4 | ND | ND | ND | ND | NA | NA | 4.4 | 31 | 54 | | | |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | 210 | 3.6 | ND | ND | ND | 0.63 | ND | 3.5 | 13 | 3 | ND | ND | ND | ND | ND | ND | NA | NA | ND | 8.5 | 18 | | | |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | 370 | 6.1 | ND | ND | ND | 0.82 | ND | 3.2 | 17 | 4.2 | ND | ND | ND | ND | ND | ND | NA | NA | 1.2 | 13 | 16 | | | |
| Carbazole | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | 2.3 | 0.6 | ND | 0.99 | ND | ND | ND | ND | NA | NA | ND | 13 | 4.9 | | | |
| Chrysene | NE | 780 | 10,000 | mg/kg | 470 | 7.8 | ND | ND | ND | ND | ND | 5.3 | 28 | 7 | 0.54 | 0.71 | ND | ND | ND | ND | NA | NA | 3.2 | 26 | 35 | | | |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | 0.62 | 4.8 | 1.1 | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | 6.8 | | | |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | 270 | ND | ND | ND | ND | ND | ND | 0.87 | 1.9 | 0.78 | ND | 0.7 | ND | ND | ND | ND | NA | NA | 0.56 | 15 | 7.6 | | | |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | 1,600 | ND | ND | ND | ND | 1.4 | ND | 7.7 | 63 | 15 | 1.2 | 1 | ND | ND | ND | ND | NA | NA | 7.7 | 76 | 74 | | | |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | 480 | 6.3 | ND | ND | ND | ND | ND | 1.6 | 6.5 | 1.3 | ND | 2.2 | ND | ND | ND | ND | NA | NA | ND | 27 | 12 | | | |
| Hexachloroethane | NE | 410 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND | | | |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | 220 | 3.3 | ND | ND | ND | 0.75 | ND | 3.1 | 15 | 3.4 | ND | ND | ND | ND | ND | ND | NA | NA | ND | 10 | 21 | | | |
| Isophorone | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | 0.88 | ND | ND | ND | 0.98 | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND | | | |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | 290 | 51.5 | ND | ND | ND | ND | ND | 2.6 | 0.94 | 0.4 | ND | 5.3 | ND | ND | ND | ND | NA | NA | 1.4 | 18 | 36 | | | |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | 1,900 | 19.3 | ND | ND | ND | 0.48 | ND | 4.8 | 52 | 12 | 0.92 | 4 | ND | ND | ND | ND | NA | NA | 5.1 | 87 | 52 | | | |
| Phenol | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.6 | ND | ND | ND | ND | ND | ND | NA | NA | ND | ND | ND | | | |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | 1,000 | ND | ND | ND | ND | 1.2 | ND | 18 | 49 | 11 | 1 | 2.6 | ND | ND | ND | ND | NA | NA | 5 | 47 | 63 | | | |

Notes:
 ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

**TABLE P-2 - SUBSURFACE SOIL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | E90 2-4 FT 1/25/2000 | E91 2-4 FT 1/25/2000 | Test Pit E86 | | | | F11 6-8 FT 1/6/2000 | F23 4-6 FT 1/7/2000 | F24 8-10 FT 1/7/2000 | F25 8-10 FT 1/7/2000 | F29 8-10 FT 1/10/2000 | F30 6-8 FT 1/7/2000 | F31 4-6 FT 1/10/2000 | F37 4-6 FT 1/12/2000 | F39 4-6 FT 1/12/2000 | F40 2-4 FT 1/12/2000 | F41 4-6 FT 1/12/2000 | F42 4-6 FT 1/12/2000 | F43 4-6 FT 1/12/2000 | F44 4-6 FT 1/12/2000 | F45 4-6 FT 1/13/2000 |
|--|--------------------------------|---------------|-----------|-------|----------------------------|----------------------------|--------------|--------------|----------------|----------------|---------------------------|---------------------------|----------------------------|----------------------------|-----------------------------|---------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | | | | | | | 4.5 FT - Wet | 3 FT - Loose | 4 FT - Mod | 4 FT - Dense | | | | | | | | | | | | | | | |
| | | | | | | | 9/25/2000 | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | 0.52 | ND | ND | ND | ND | ND | ND | ND | ND | 0.08 | ND | ND | ND | 40 |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | 0.33 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 28 |
| 2-Butanone | NE | 10,000 | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | ND | 0.12 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.9 |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | ND | ND | ND | ND | <u>326</u> | <u>113</u> | ND | 0.17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Carbon Disulfide | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloroform | NE | 940 | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | 42.2 | 14.5 | ND | 0.97 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.05 | ND |
| Isopropylbenzene | NE | 10,000 | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | 0.1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methyl tert-Butyl Ether | 100 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | 10.5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | ND | 1.2 | NA | NA | NA | NA | ND | 10 | ND | ND | ND | ND | ND | ND | ND | ND | 4.5 | 0.46 | ND | ND | 42 |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 64 | 190 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | 0.054 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethane | 4.2 | 110 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | <u>417</u> | <u>158</u> | ND | 0.46 | ND | ND | ND | ND | ND | ND | ND | ND | 0.22 | ND | ND | ND | 1.3 |
| Trichlorofluoromethane | NE | NE | 10,000 | mg/kg | ND | ND | NA | NA | NA | NA | 0.025 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | 658 | 263 | ND | 0.66 | ND | ND | ND | ND | ND | ND | ND | ND | 0.34 | ND | 0.061 | 0.085 | 44 |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | ND | 28,000 | 1,360 | 211 | 224,000 | 112,000 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 17,000 | 1,800 | 550 | 2,800 | 20,000 |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | 18.1 | 7.8 | NA | NA | NA | NA | ND | 1.1 | 0.13 | 0.16 | ND | ND | 2.4 | 1.6 | ND | ND | 41.1 | 1.7 | ND | 0.11 | 4 |
| Antimony | NE | 820 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | NE | 7 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Beryllium | NE | 1.5 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | NE | 1,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chromium | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Copper | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Iron | NE | NE | NE | mg/kg | 12,000 | 21,000 | NA | NA | NA | NA | 11400 | 12700 | 6110 | 11400 | 4390 | 14300 | 16400 | 12000 | 10800 | 9450 | 8620 | 12200 | 11,500 | 11,500 | 8,810 |
| Lead | NE | 500 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Mercury | NE | 610 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Nickel | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Silver | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Thallium | NE | 140 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor 1242 | 10 | 10 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.1 | ND | ND | ND | ND | ND | ND |
| Aroclor 1260 | 10 | 10 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.19 | ND | ND | ND | ND | ND | ND | ND | ND |

Notes:
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Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

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NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | E90 | E91 | Test Pit E86 | | | | F11 | F23 | F24 | F25 | F29 | F30 | F31 | F37 | F39 | F40 | F41 | F42 | F43 | F44 | F45 | | | |
|--|--------------------------------|---------------|-----------|-------|-------------|------------|--------------|--------------|----------------|---------------|----------|-----------|----------|----------|-----------|----------|------------|-----------|-----------|------------|-----------|------------|------------|------------|-----------|-----------|-----------|-----------|
| | | | | | 2-4 FT | 2-4 FT | 4.5 FT - Wet | 3 FT - Loose | 4 FT - Mod | 4 FT - Dense | 6-8 FT | 4-6 FT | 8-10 FT | 8-10 FT | 8-10 FT | 6-8 FT | 4-6 FT | 4-6 FT | 4-6 FT | 2-4 FT | 4-6 FT | 4-6 FT | 4-6 FT | 4-6 FT | 4-6 FT | 4-6 FT | 4-6 FT | 4-6 FT |
| | | | | | 1/25/2000 | 1/25/2000 | 9/25/2000 | | | | 1/6/2000 | 1/7/2000 | 1/7/2000 | 1/7/2000 | 1/10/2000 | 1/7/2000 | 1/10/2000 | 1/12/2000 | 1/12/2000 | 1/12/2000 | 1/12/2000 | 1/12/2000 | 1/12/2000 | 1/12/2000 | 1/12/2000 | 1/12/2000 | 1/12/2000 | 1/13/2000 |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4-Dichlorophenol | NE | 6100 | 10,000 | mg/kg | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | | |
| 2,4-Dimethylphenol | NE | 10000 | 10,000 | mg/kg | ND | ND | NA | ND | 480 | 421 | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.4 | | | |
| 2,4-Dinitrotoluene | NE | 8.4 | 10,000 | mg/kg | ND | ND | NA | 1.61 | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | 3.5 | ND | ND | | | |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | ND | 6 | NA | 2.01 | 3790 | 3540 | ND | 73 | ND | ND | NA | ND | ND | ND | ND | ND | 160 | 2 | 2.1 | 6.7 | 110 | | | |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | ND | 1.6 | NA | ND | 716 | 514 | ND | 4.3 | ND | ND | NA | ND | ND | ND | ND | ND | 2.7 | ND | ND | ND | 1.6 | | | |
| 4-Chloroaniline | NE | 8200 | 10,000 | mg/kg | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | | |
| 4-Methylphenol | NE | NE | 10,000 | mg/kg | ND | 3.6 | NA | ND | 1530 | 1180 | ND | 11 | ND | ND | NA | ND | ND | ND | ND | ND | 8 | ND | ND | ND | 3.9 | | | |
| 4-Nitroaniline | NE | 8200 | 10,000 | mg/kg | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 18 | | | |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | ND | ND | NA | ND | 347 | 323 | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | 31 | ND | ND | 22 | 21 | | | |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | 0.44 | 7.7 | NA | 1.2 | 1580 | 1280 | ND | 63 | ND | ND | NA | ND | ND | ND | ND | ND | 150 | 9.4 | 3 | 1.4 | 96 | | | |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | 0.25 | 6.9 | NA | 2.15 | 2370 | 2320 | ND | 110 | ND | ND | NA | ND | 0.52 | ND | ND | ND | 400 | 29 | 3.5 | 40 | 170 | | | |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | 1.7 | 17 | NA | 1.81 | 1,920 | 2,080 | ND | 99 | ND | ND | NA | ND | 1.6 | 0.42 | 0.44 | 460 | 64 | 5.5 | 54 | 170 | | | | |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | 0.86 | 20 | NA | 1.6 | 923 | 675 | ND | 71 | ND | ND | NA | ND | 1.6 | ND | 0.37 | 330 | 49 | 4.5 | 36 | 120 | | | | |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | 4.4 | 26 | NA | 1.08 | 894 | 652 | ND | 95 | ND | ND | NA | ND | 2.3 | 0.49 | 0.76 | 580 | 81 | 6.3 | 49 | 170 | | | | |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | 1.2 | 12 | NA | 1.31 | 407 | 276 | ND | 34 | ND | ND | NA | ND | 0.9 | ND | ND | 130 | 23 | 1.9 | 13 | 47 | | | | |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | 1.5 | 9.3 | NA | 1.62 | 740 | 369 | ND | 52 | ND | ND | NA | ND | 0.71 | ND | ND | 150 | 28 | 2.6 | 14 | 63 | | | | |
| Carbazole | NE | NE | 10,000 | mg/kg | ND | ND | NA | ND | ND | ND | ND | 49 | ND | ND | NA | ND | ND | ND | ND | 460 | 15 | 3.1 | 6.6 | 32 | | | | |
| Chrysene | NE | 780 | 10,000 | mg/kg | 2.3 | 18 | NA | 1.95 | 1,970 | 2,060 | ND | 84 | ND | ND | NA | ND | 1.5 | 0.36 | 0.5 | 380 | 56 | 4.8 | 45 | 130 | | | | |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | ND | 3.1 | NA | ND | 205 | 159 | ND | 11 | ND | ND | NA | ND | ND | ND | ND | 56 | 9 | ND | 5.1 | 21 | | | | |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | ND | 3.8 | NA | 1.67 | ND | 2,300 | ND | 68 | ND | ND | NA | ND | ND | ND | ND | 220 | 4.4 | 1.9 | 7.7 | 120 | | | | |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | 2.2 | 28 | NA | 4.56 | 5,020 | 5,680 | ND | 240 | ND | ND | NA | ND | 3.3 | 0.74 | 0.84 | 1300 | 150 | 12 | 110 | 380 | | | | |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | ND | 11 | NA | 2.67 | 3,220 | 3,560 | ND | 100 | ND | ND | NA | ND | ND | ND | ND | 290 | 12 | 3.3 | 24 | 240 | | | | |
| Hexachloroethane | NE | 410 | 10,000 | mg/kg | ND | ND | NA | ND | 72.6 | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | | | | |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | 1.3 | 12 | NA | 1.03 | 382 | 279 | ND | 41 | ND | ND | NA | ND | 1 | ND | ND | 170 | 28 | 2.2 | 15 | 54 | | | | |
| Isophorone | NE | NE | 10,000 | mg/kg | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | | | | |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | 0.5 | 39 | NA | 4.87 | 165,000 | 15,200 | ND | 160 | ND | ND | NA | ND | ND | ND | ND | 300 | 3.8 | 4.6 | 2.3 | 48 | | | | |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | 1 | 7.6 | NA | 7.88 | 8,860 | 9,150 | ND | 270 | ND | ND | NA | ND | 2.7 | 0.6 | 0.45 | 1400 | 100 | 13 | 120 | 490 | | | | |
| Phenol | NE | 10,000 | 10,000 | mg/kg | ND | 5.8 | NA | ND | ND | ND | ND | 8 | ND | ND | NA | ND | ND | ND | ND | 4.3 | ND | ND | ND | ND | | | | |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | 1.8 | 26 | NA | 2.91 | 3,480 | 3,790 | ND | 160 | ND | ND | NA | ND | 2.5 | 0.54 | 0.61 | 700 | 88 | 88 | 100 | 270 | | | | |

Notes:
 ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

TABLE P-2 - SUBSURFACE SOIL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | F46 | F47 | F48 | F56 | F57 | VHB-1 | | VHB-3 | | VHB-5 | VHB-14 | | GZ-301D | GZ-302D | GZ-302D | GZ-303D | GZ-303D | GZ-304D | GZ-304D | GZ-304D | GZ-305S | GZ-306S | | | | |
|--|--------------------------------|---------------|-----------|-------|--------------|-----------|--------------|-----------|-----------|---------------|-----------|-----------|-----------|-------------|-----------|-----------|-------------|-------------|-----------|-----------|-----------|--------------|----------------|----------------|---------|--------------|--------|----|----|--------------|
| | | | | | 4-6 FT | 4-6 FT | 4-6 FT | 4-6 FT | 2-4 FT | 6-8 FT | 10-12 FT | 10-12 FT | 12-14 FT | 4-6 FT | 10-12 FT | 12-14 FT | 4-6 FT | 4-6 FT | 18-20 FT | 4-6 FT | 14-16 FT | 2-4 FT | 8-10 FT | 12-14 FT | 8-10 FT | 8-10 FT | 2-4 FT | | | |
| | | | | | 1/12/2000 | 1/13/2000 | 1/13/2000 | 1/19/2000 | 1/19/2000 | 1/15/2002 | 1/14/2002 | 1/14/2002 | 1/17/2002 | 5/22/2014 | 5/22/2014 | 5/29/2014 | 5/22/2014 | 5/28/2014 | 5/21/2014 | 5/28/2014 | 5/28/2014 | 5/22/2014 | 5/21/2014 | | | | | | | |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | 0.61 | ND | ND | ND | 1.7 | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | 0.167 | NA | NA | NA | 0.911 |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | 0.5 | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | 0.0593 | NA | NA | NA | 0.99 |
| 2-Butanone | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | NA | NA | NA | ND |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | 0.6 | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | 0.0194 | NA | NA | NA | 0.11 |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | NA | ND | NA | 0.3 | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | 0.181 | NA | NA | NA | 0.234 |
| Carbon Disulfide | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | NA | NA | NA | ND |
| Chloroform | NE | 940 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | 0.0224 | 0.0146 | NA | 0.0229 | NA | 0.0242 | NA | NA | NA | 0.0242 | NA | NA | NA | 0.0291 |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | ND | 0.67 | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | 0.394 | NA | NA | NA | 0.315 | NA | NA | NA | 0.315 |
| Isopropylbenzene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | 1 | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | 0.0339 | NA | NA | NA | 0.11 | NA | NA | NA | 0.11 |
| Methyl tert-Butyl Ether | 100 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | NA | NA | NA | ND |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | ND | ND | ND | ND | ND | 0.4 | ND | NA | 0.5 | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | NA | NA | NA | ND |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | 0.11 | 2 | ND | ND | ND | 6.9 | ND | NA | 1.1 | NA | 2.2 | NA | 0.0259 | ND | NA | ND | NA | 0.72 | NA | NA | NA | 5.61 | NA | NA | NA | 5.61 |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | NA | NA | NA | ND |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | 0.8 | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | 0.0871 | NA | NA | NA | 0.165 | NA | NA | NA | 0.165 |
| sec-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | 1.3 | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | 0.029 | NA | NA | NA | 0.132 | NA | NA | NA | 0.132 |
| Styrene | 64 | 190 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | NA | NA | NA | ND |
| tert-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | 0.1 | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | NA | NA | NA | ND |
| Tetrachloroethane | 4.2 | 110 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | NA | NA | NA | ND |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | ND | 0.45 | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | 0.264 | NA | NA | NA | 0.474 | NA | NA | NA | 0.474 |
| Trichlorofluoromethane | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | NA | NA | NA | ND |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | ND | 1.7 | ND | ND | ND | ND | ND | NA | ND | NA | ND | NA | ND | ND | NA | ND | NA | 0.681 | NA | NA | NA | 1.3 | NA | NA | NA | 1.3 |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | 2,800 | 230 | 4,100 | 680 | 240 | 10,454 | NA | 85 | NA | 3183 | NA | 481 | 971 | ND | 1820 | ND | 1730 | 3,790 | 631,000 | 606,000 | 1920 | 4,250 | NA | NA | NA | 4,250 |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | 3.4 | 0.82 | 1.3 | 3.9 | 0.3 | NA | NA | NA | NA | NA | NA | NA | 1.62 | ND | NA | ND | NA | 2.67 | NA | NA | NA | 4.89 | NA | NA | NA | 4.89 |
| Antimony | NE | 820 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | 7.5 | NA | ND | NA | 80.4 | NA | NA | NA | 9.1 | NA | NA | NA | 9.1 |
| Arsenic | NE | 7 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10.2 | 17.1 | NA | 6.1 | NA | 46.4 | NA | NA | NA | 81.9 | NA | NA | NA | 81.9 |
| Beryllium | NE | 1.5 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.26 | 0.46 | NA | 0.3 | NA | 0.55 | NA | NA | NA | 0.44 | NA | NA | NA | 0.44 |
| Cadmium | NE | 1,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | NA | ND | NA | 3.32 | NA | NA | NA | 2.88 | NA | NA | NA | 2.88 |
| Chromium | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3.2 | 11 | NA | 5.7 | NA | 13.6 | NA | NA | NA | 5.9 | NA | NA | NA | 5.9 |
| Copper | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 50.6 | 17.4 | NA | 6.1 | NA | 1,750 | NA | NA | NA | 233 | NA | NA | NA | 233 |
| Iron | NE | NE | NE | mg/kg | 19,900 | 40,800 | 107,000 | 177,000 | 19,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | NE | 500 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1550 | 9.7 | NA | 5.9 | NA | 1,610 | NA | NA | NA | 245 | NA | NA | NA | 245 |
| Mercury | NE | 610 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.04 | ND | NA | ND | NA | 1.37 | NA | NA | NA | 0.415 | NA | NA | NA | 0.415 |
| Nickel | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 11.6 | 16.7 | NA | 6.3 | NA | 57.9 | NA | NA | NA | 10.5 | NA | NA | NA | 10.5 |
| Silver | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | 0.9 | NA | ND | NA | 2.51 | NA | NA | NA | 1.16 | NA | NA | NA | 1.16 |
| Thallium | NE | 140 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | NA | ND | NA | ND | NA | NA | NA | 2.05 | NA | NA | NA | 2.05 |
| Zinc | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 229 | 37.1 | NA | 15 | NA | 1,280 | NA | NA | NA | 97.5 | NA | NA | NA | 97.5 |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor 1242 | 10 | 10 | 10,000 | mg/kg | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1260 | 10 | 10 | 10,000 | mg/kg | 0.14 | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

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NORTHERN AND WESTERN SITE PERIMETER DATA GAP

642 Allens Avenue
 Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | F46 | F47 | F48 | F56 | F57 | VHB-1 | | VHB-3 | | VHB-5 | VHB-14 | | GZ-301D | GZ-302D | GZ-302D | GZ-303D | GZ-303D | GZ-304D | GZ-304D | GZ-304D | GZ-305S | GZ-306S | |
|--|--------------------------------|---------------|-----------|-------|-----------|-----------|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|-----------|----------|---------|-------------|--------|
| | | | | | 4-6 FT | 4-6 FT | 4-6 FT | 4-6 FT | 2-4 FT | 6-8 FT | 10-12 FT | 10-12 FT | 12-14 FT | 4-6 FT | 10-12 FT | 12-14 FT | 4-6 FT | 4-6 FT | 18-20 FT | 4-6 FT | 14-16 FT | 2-4 FT | 8-10 FT | 12-14 FT | 8-10 FT | 8-10 FT | 2-4 FT |
| | | | | | 1/12/2000 | 1/13/2000 | 1/13/2000 | 1/19/2000 | 1/19/2000 | 1/15/2002 | 1/14/2002 | 1/14/2002 | 1/17/2002 | 5/22/2014 | 5/22/2014 | 5/29/2014 | 5/22/2014 | 5/28/2014 | 5/21/2014 | 5/28/2014 | 5/28/2014 | 5/22/2014 | 5/21/2014 | | | | |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4-Dichlorophenol | NE | 6100 | 10,000 | mg/kg | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dimethylphenol | NE | 10000 | 10,000 | mg/kg | ND | ND | 2.5 | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dinitrotoluene | NE | 8.4 | 10,000 | mg/kg | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | 5.3 | 2.2 | ND | 3.3 | 0.43 | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 2.3 | NA | NA | NA | 10.8 | |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | ND | 0.089 | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| 4-Chloroaniline | NE | 8200 | 10,000 | mg/kg | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| 4-Methylphenol | NE | NE | 10,000 | mg/kg | ND | 0.5 | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| 4-Nitroaniline | NE | 8200 | 10,000 | mg/kg | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | 7.3 | ND | 3.5 | ND | ND | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | ND | NA | NA | NA | ND | |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | 17 | 9.9 | 2.2 | ND | ND | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 5.14 | NA | NA | NA | 30.3 | |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | 37 | 17 | 3.9 | 1.2 | 0.66 | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 5.91 | NA | NA | NA | 28.1 | |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | 82 | 66 | 13 | 3.2 | 2.6 | NA | ND | NA | NA | ND | NA | ND | 0.454 | ND | NA | ND | NA | 19 | NA | NA | NA | 97.3 | |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | 70 | 48 | 18 | 2.7 | 1.8 | NA | ND | NA | NA | ND | NA | ND | 0.269 | ND | NA | ND | NA | 15.7 | NA | NA | NA | 67.4 | |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | 91 | 78 | 23 | 4.1 | 2.9 | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 19.5 | NA | NA | NA | 83.4 | |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | 36 | 22 | 7.9 | ND | ND | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 8.45 | NA | NA | NA | 15.5 | |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | 35 | 25 | 9.4 | 1.4 | 1 | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 7.57 | NA | NA | NA | 46.4 | |
| Carbazole | NE | NE | 10,000 | mg/kg | 11 | 3.4 | 0.51 | ND | 2.5 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Chrysene | NE | 780 | 10,000 | mg/kg | 70 | 55 | 14 | 3.6 | ND | NA | ND | NA | NA | ND | NA | ND | 0.624 | ND | NA | ND | NA | 18 | NA | NA | NA | 85.1 | |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | ND | 10 | ND | ND | ND | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 3.7 | NA | NA | NA | 8.48 | |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | 12 | 3.4 | 1.5 | 0.83 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | 140 | 150 | 23 | 8.5 | 6.2 | NA | 5.8 | NA | NA | ND | NA | ND | 0.505 | ND | NA | ND | NA | 30.2 | NA | NA | NA | 154 | |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | 28 | 8 | 3.1 | 0.46 | ND | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 2.27 | NA | NA | NA | 15.5 | |
| Hexachloroethane | NE | 410 | 10,000 | mg/kg | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | ND | |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | 39 | 26 | ND | ND | ND | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 8.38 | NA | NA | NA | 16.5 | |
| Isophorone | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | 9.6 | 6.6 | 1.9 | 3.3 | ND | NA | ND | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 5.34 | NA | NA | NA | 16.3 | |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | 120 | 76 | 8 | 6.2 | 4.3 | NA | 5 | NA | NA | ND | NA | ND | ND | ND | NA | ND | NA | 16.9 | NA | NA | NA | 99.7 | |
| Phenol | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | 150 | 82 | 21 | 4.7 | 3.2 | NA | 5 | NA | NA | ND | NA | ND | 0.551 | ND | NA | ND | NA | 19.2 | NA | NA | NA | 109 | |

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642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | GZ-306S 6-8 FT 5/22/2014 | GZ-306S 8-10 FT 5/22/2014 | GZ-307S 4-6 FT 5/19/2014 | GZ-307S 10-12 FT 6/3/2014 | GZ-308S 2-4 FT 5/19/2014 | GZ-308S 6-8 FT 6/4/2014 | GZ-309D 4-6 FT 5/19/2014 | GZ-309D 6-8 FT 5/20/2014 | GZ-310D 2-4 FT 5/28/2014 | GZ-310 8-9 FT 6/4/2014 | GZ-311D 2-4 FT 5/19/2014 | GZ-312D 2-4 FT 5/23/2014 | GZ-312D 6-8 FT 5/23/2014 |
|--|--------------------------------|---------------|-----------|-------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|------------------------|--------------------------|--------------------------|--------------------------|
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | NA | NA | 0.0505 | NA | ND | NA | ND | NA | 0.0134 | NA | 0.0284 | ND | NA |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | 0.0176 | ND | NA |
| 2-Butanone | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | NA | NA | 0.0399 | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | NA | NA | 0.0117 | NA | ND | NA | ND | NA | 0.008 | NA | 0.049 | ND | NA |
| Carbon Disulfide | NE | NE | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Chloroform | NE | 940 | 10,000 | mg/kg | NA | NA | 0.0211 | NA | 0.0209 | NA | 0.0132 | NA | ND | NA | 0.0166 | 0.0169 | NA |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 0.0519 | NA | 0.0255 | ND | NA |
| Isopropylbenzene | NE | 10,000 | 10,000 | mg/kg | NA | NA | 1.26 | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Methyl tert-Butyl Ether | 100 | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | NA | NA | 0.589 | NA | 0.0243 | NA | ND | NA | 0.218 | NA | 0.27 | ND | NA |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | NA | NA | 1.16 | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | NA | NA | 1.5 | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| sec-Butylbenzene | NE | NE | 10,000 | mg/kg | NA | NA | 1.85 | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Styrene | 64 | 190 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 0.0089 | NA | ND | ND | NA |
| tert-Butylbenzene | NE | NE | 10,000 | mg/kg | NA | NA | 0.16 | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Tetrachloroethane | 4.2 | 110 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | NA | NA | 0.0716 | NA | ND | NA | ND | NA | ND | NA | 0.0401 | ND | NA |
| Trichlorofluoromethane | NE | NE | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | NA | NA | 0.12 | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | 68,500 | 15,300 | 7,460 | 8,430 | 49 | 8,140 | ND | 6,330 | 553 | 42,700 | 573 | 83.9 | 4,270 |
| Inorganic Compounds | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 52.6 | NA | ND | ND | NA |
| Antimony | NE | 820 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | 6.7 | ND | NA |
| Arsenic | NE | 7 | 10,000 | mg/kg | NA | NA | 10.9 | NA | 4.2 | NA | 8.5 | NA | 11.7 | NA | 12.7 | 4.9 | NA |
| Beryllium | NE | 1.5 | 10,000 | mg/kg | NA | NA | 0.39 | NA | 0.22 | NA | 0.34 | NA | 0.3 | NA | 0.4 | 0.28 | NA |
| Cadmium | NE | 1,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | NA | NA | ND | NA | ND | ND | NA |
| Chromium | NE | 10,000 | 10,000 | mg/kg | NA | NA | 10.4 | NA | 4.1 | NA | 7.1 | NA | 7.4 | NA | 9.6 | 3.3 | NA |
| Copper | NE | 10,000 | 10,000 | mg/kg | NA | NA | 16 | NA | 9.4 | NA | 9.8 | NA | 30.6 | NA | 26.2 | 16.6 | NA |
| Iron | NE | NE | NE | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | NE | 500 | 10,000 | mg/kg | NA | NA | 16.2 | NA | ND | NA | ND | NA | 79.3 | NA | 60 | 16.6 | NA |
| Mercury | NE | 610 | 10,000 | mg/kg | NA | NA | ND | NA | 0.042 | NA | ND | NA | 0.753 | NA | 0.101 | ND | NA |
| Nickel | NE | 10,000 | 10,000 | mg/kg | NA | NA | 13.6 | NA | 7.2 | NA | 10.2 | NA | 9.5 | NA | 11.4 | 8.2 | NA |
| Silver | NE | 10,000 | 10,000 | mg/kg | NA | NA | 0.49 | NA | ND | NA | ND | NA | ND | NA | 0.77 | ND | NA |
| Thallium | NE | 140 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Zinc | NE | 10,000 | 10,000 | mg/kg | NA | NA | 45.5 | NA | 92.1 | NA | 23.1 | NA | 128 | NA | 34.6 | 21.8 | NA |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | | | | | | | | | |
| Aroclor 1242 | 10 | 10 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1260 | 10 | 10 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:
 ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

**TABLE P-2 - SUBSURFACE SOIL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | GZ-306S 6-8 FT 5/22/2014 | GZ-306S 8-10 FT 5/22/2014 | GZ-307S 4-6 FT 5/19/2014 | GZ-307S 10-12 FT 6/3/2014 | GZ-308S 2-4 FT 5/19/2014 | GZ-308S 6-8 FT 6/4/2014 | GZ-309D 4-6 FT 5/19/2014 | GZ-309D 6-8 FT 5/20/2014 | GZ-310D 2-4 FT 5/28/2014 | GZ-310 8-9 FT 6/4/2014 | GZ-311D 2-4 FT 5/19/2014 | GZ-312D 2-4 FT 5/23/2014 | GZ-312D 6-8 FT 5/23/2014 |
|--|--------------------------------|---------------|-----------|-------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|------------------------|--------------------------|--------------------------|--------------------------|
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | |
| 2,4-Dichlorophenol | NE | 6100 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dimethylphenol | NE | 10000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dinitrotoluene | NE | 8.4 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 0.576 | NA | ND | ND | NA |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Chloroaniline | NE | 8200 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Nitroaniline | NE | 8200 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 0.926 | NA | 0.516 | ND | NA |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | 0.54 | ND | NA |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 1.23 | NA | 2.39 | ND | NA |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 1.54 | NA | 2.03 | ND | NA |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 2.36 | NA | 3.3 | ND | NA |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 1 | NA | 0.597 | ND | NA |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 1.03 | NA | 1.03 | ND | NA |
| Carbazole | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | 780 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 1.46 | NA | 2.04 | ND | NA |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 0.279 | NA | 0.211 | ND | NA |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 1.59 | NA | 3.57 | ND | NA |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | ND | NA |
| Hexachloroethane | NE | 410 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | NA | NA | NA | NA | NA |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 0.903 | NA | 0.586 | ND | NA |
| Isophorone | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 2.33 | NA | 0.76 | ND | NA |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | NA | NA | 0.538 | NA | ND | NA | ND | NA | 0.754 | NA | 1.48 | ND | NA |
| Phenol | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | NA | NA | ND | NA | ND | NA | ND | NA | 1.29 | NA | 2.34 | ND | NA |

Notes:

ND - Not Detected NE - Not Established R - sample rejected by the lab
NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

**TABLE P-3 - SOIL TPH FINGERPRINTING RESULTS
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

File No. 03.00033554.01
1/5/2024

642 Allens Avenue
Providence, Rhode Island

| | Units | RCA-1 | RCA-2 | Test Pit D87A | Test Pit D87B | Test Pit E86 | | | | GZ-302D | GZ-303D | GZ-304D |
|-------------------------------------|-------|----------|----------|--------------------------------|--------------------|-------------------|--------------------|------------|--------------|---|---|------------------------------|
| | | 6-9 FT | 4-6 FT | 4.5 FT | 4.5 FT | 4.5 FT - Wet | 3 FT - Loose | 4 FT - Mod | 4 FT - Dense | 18-20 FT | 14-16 FT | 8-10 FT |
| | | 1994 | 1994 | 9/12/2000 | 9/12/2000 | 9/25/2000 | | | | 5/29/2014 | 5/28/2014 | 5/28/2014 |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | |
| TPH | mg/kg | Note 2 | 13,900 | 7730 | 175 | 1,360 | 211 | 224,000 | 112,000 | 1820 | 1730 | 631,000 |
| TPH Fingerprint | NA | Coal Tar | Fuel Oil | Diesel / Lubricating Oil | Lubricating Oil | Fuel Oil No. 6 | Lubricating Oil | Coal Tar | Coal Tar | Majority Middle Distillate Petroleum | Majority Middle Distillate Petroleum | Tar Impacted Hydrocarbons |

Notes:

Note 1 - The tar material present in this sample indicates varying degrees of weathering.

Note 2 - TPH Hydrocarbon Content is noted as qualitative results only.

**TABLE P-3 - SOIL TPH FINGERPRINTING RESULTS
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

File No. 03.00033554.01

1/5/2024

642 Allens Avenue

Providence, Rhode Island

| | Units | GZ-304D 12-14 FT 5/28/2014 Note 1 | GZ-305S 8-10 FT 5/22/2014 Note 1 | GZ-306S 6-8 FT 5/22/2014 Note 1 | GZ-306S 8-10 FT 5/22/2014 Note 1 | GZ-307S 10-12 FT 6/3/2014 | GZ-308S 6-8 FT 6/4/2014 | GZ-309D 6-8 FT 5/20/2014 | GZ-310 8-9 FT 6/4/2014 Note 1 | GZ-312D 6-8 FT 5/23/2014 |
|-------------------------------------|-------|--|---|--|---|--------------------------------------|--------------------------------------|--------------------------------------|--|--------------------------------------|
| Total Petroleum Hydrocarbons | | | | | | | | | | |
| TPH | mg/kg | 606,000 | 1920 | 68,500 | 15300 | 8430 | 8140 | 6330 | 42700 | 4270 |
| TPH Fingerprint | NA | Tar Impacted Hydrocarbons | Mix of Middle Distillate Petroleum, Heavy Petroleum and Tar Impacted Hydrocarbons | Tar Impacted Hydrocarbons | Mix of Middle Distillate Petroleum, Heavy Petroleum and Tar Impacted Hydrocarbons | Majority Middle Distillate Petroleum | Majority Middle Distillate Petroleum | Majority Middle Distillate Petroleum | Tar Impacted Hydrocarbons | Majority Middle Distillate Petroleum |

Notes:

Note 1 - The tar material present in this sample indicates varying degrees of weathering.

Note 2 - TPH Hydrocarbon Content is noted as qualitative results only.

**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2011 | | | | | | | August 2011 | | | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|--|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | | |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | | | |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | | | |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | | | |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.45 | - | 15.4 | 5.37 | NP | NP | 5.37 | - | 6.66 | - | 15.4 | 5.16 | NP | NP | 5.16 | | |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.54 | - | 10.9 | 5.79 | NP | NP | 5.79 | - | 7.56 | - | 10.9 | 2.77 | NP | NP | 2.77 | | |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | - | 5.42 | - | 9.15 | 6.54 | NP | NP | 6.54 | trace | 6.41 | - | 9.15 | 5.55 | trace | NP | 5.55 | | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | - | 4.68 | - | 9.52 | 4.99 | NP | NP | 4.99 | - | 7.68 | - | 9.52 | 1.99 | NP | NP | 1.99 | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | | | | | | | | | | | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | | | |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to NAVD 88 Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | February 2013 | | | | | | | November 2013 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.69 | - | 15.4 | 5.13 | NP | NP | 5.13 | - | 7.19 | - | 15.45 | 4.63 | NP | NP | 4.63 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.88 | - | 10.88 | 5.45 | NP | NP | 5.45 | - | 4.81 | - | 10.9 | 5.52 | NP | NP | 5.52 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | - | 4.97 | - | 9.4 | 6.99 | NP | NP | 6.99 | - | 6.54 | - | 9.5 | 5.42 | NP | NP | 5.42 |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | - | 4.15 | - | 9.35 | 5.52 | NP | NP | 5.52 | - | 5.78 | - | 9.5 | 3.89 | NP | NP | 3.89 |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | | | | | | | | | | | | | | | | |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | | | | | | | | | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | | | | | | | | | | | | | | | | |

Notes
Well is located in the Natural Gas Regulator portion of the Property
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD 88 Datum
NP - Indicates No Product observed.
NS - Not Surveyed
Blanks indicate no measurement collected on that particular day.
Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2014 | | | | | | | July 2, 2014 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 9.82 | - | 14.7 | 7.51 | NP | NP | 7.51 | - | 10.06 | - | 14.45 | 7.27 | NP | NP | 7.27 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 10.87 | - | 29.7 | 6.46 | NP | NP | 6.46 | - | 10.05 | - | 29.6 | 7.28 | NP | NP | 7.28 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.42 | - | 14.7 | 7.25 | NP | NP | 7.25 | - | 9.59 | - | 14.56 | 7.08 | NP | NP | 7.08 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.35 | - | 29.5 | 7.24 | NP | NP | 7.24 | - | 9.48 | - | 29.44 | 7.11 | NP | NP | 7.11 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.32 | - | 15.5 | 5.50 | NP | NP | 5.50 | - | 6.3 | - | 15.45 | 5.52 | NP | NP | 5.52 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.55 | - | 11.5 | 5.78 | NP | NP | 5.78 | - | 4.65 | - | 11.35 | 5.68 | NP | NP | 5.68 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | - | 5.01 | - | 10.1 | 6.95 | NP | NP | 6.95 | - | 6.27 | - | 10.2 | 5.69 | NP | NP | 5.69 |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | - | 4.26 | - | 9.3 | 5.41 | NP | NP | 5.41 | - | 5.54 | - | 9.35 | 4.13 | NP | NP | 4.13 |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.55 | - | 15.2 | 6.73 | NP | NP | 6.73 | - | 6.55 | - | 14.91 | 6.73 | NP | NP | 6.73 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.18 | - | 29.7 | 6.95 | NP | NP | 6.95 | - | 6.3 | - | 29.67 | 6.83 | NP | NP | 6.83 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.55 | - | 29.7 | 5.40 | NP | NP | 5.40 | - | 6.45 | - | 29.58 | 5.50 | NP | NP | 5.50 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 6.8 | - | 14.15 | 4.84 | NP | NP | 4.84 | - | 6.75 | - | 14.16 | 4.89 | NP | NP | 4.89 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 6.59 | - | 14.9 | 4.90 | NP | NP | 4.90 | - | 6.55 | - | 14.8 | 4.94 | NP | NP | 4.94 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | - | 4.73 | - | 14.15 | 5.45 | NP | NP | 5.45 | - | 4.86 | - | 14.01 | 5.32 | NP | NP | 5.32 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 1.79 | - | 11.58 | 7.17 | NP | NP | 7.17 | - | 2.58 | - | 11.41 | 6.38 | NP | NP | 6.38 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.44 | - | 29.9 | 5.39 | NP | NP | 5.39 | - | 4.11 | - | 29.9 | 5.72 | NP | NP | 5.72 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | - | 7.07 | - | 32.7 | 5.75 | NP | NP | 5.75 | - | 7.59 | - | 32.68 | 5.23 | NP | NP | 5.23 |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | - | 5.82 | - | 15.12 | 4.76 | NP | NP | 4.76 | - | 6.13 | - | 15 | 4.45 | NP | NP | 4.45 |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | - | 5.07 | - | 32.75 | 5.72 | NP | NP | 5.72 | - | 6.25 | - | 32.6 | 4.54 | NP | NP | 4.54 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to NAVD 88 Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 23, 2014 | | | | | | | October 2014 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 10.1 | - | 14.44 | 7.23 | NP | NP | 7.23 | - | 10.52 | - | 14.57 | 6.81 | NP | NP | 6.81 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 10.12 | - | 29.6 | 7.21 | NP | NP | 7.21 | - | 10.49 | - | 29.72 | 6.84 | NP | NP | 6.84 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.66 | - | 14.55 | 7.01 | NP | NP | 7.01 | - | 9.99 | - | 14.56 | 6.68 | NP | NP | 6.68 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.57 | - | 29.41 | 7.02 | NP | NP | 7.02 | - | 9.9 | - | 29.45 | 6.69 | NP | NP | 6.69 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.25 | - | 15.45 | 5.57 | NP | NP | 5.57 | - | 7.57 | - | 15.43 | 4.25 | NP | NP | 4.25 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.65 | - | 11.31 | 5.68 | NP | NP | 5.68 | - | 4.92 | - | 11.35 | 5.41 | NP | NP | 5.41 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | - | 6.15 | - | 10.13 | 5.81 | NP | NP | 5.81 | - | 5.63 | - | 10.2 | 6.33 | NP | NP | 6.33 |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | - | 5.42 | - | 9.3 | 4.25 | NP | NP | 4.25 | - | 4.87 | - | 9.3 | 4.80 | NP | NP | 4.80 |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.62 | - | 14.91 | 6.66 | NP | NP | 6.66 | - | 9.98 | - | 29.97 | 3.30 | NP | NP | 3.30 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.38 | - | 29.66 | 6.75 | NP | NP | 6.75 | - | 9.93 | - | 15.05 | 3.20 | NP | NP | 3.20 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.45 | - | 29.57 | 5.50 | NP | NP | 5.50 | - | 7.00 | - | 29.62 | 4.95 | NP | NP | 4.95 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 6.72 | - | 14.15 | 4.92 | NP | NP | 4.92 | - | 6.94 | - | 14.14 | 4.70 | NP | NP | 4.70 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 6.52 | - | 14.78 | 4.97 | NP | NP | 4.97 | - | 6.73 | - | 14.77 | 4.76 | NP | NP | 4.76 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | - | 4.85 | - | 13.98 | 5.33 | NP | NP | 5.33 | - | 5.09 | - | 14 | 5.09 | NP | NP | 5.09 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 2.46 | - | 11.36 | 6.50 | NP | NP | 6.50 | - | 2.5 | - | 11.5 | 6.46 | NP | NP | 6.46 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.02 | - | 29.9 | 5.81 | NP | NP | 5.81 | - | 4.53 | - | 29.9 | 5.30 | NP | NP | 5.30 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | - | 7.58 | - | 32.56 | 5.24 | NP | NP | 5.24 | - | 7.47 | - | 32.55 | 5.35 | NP | NP | 5.35 |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | - | 6.1 | - | 14.99 | 4.48 | NP | NP | 4.48 | - | 6 | - | 14.9 | 4.58 | NP | NP | 4.58 |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | - | 6.6 | - | 32.6 | 4.19 | NP | NP | 4.19 | - | 6.54 | - | 32.7 | 4.25 | NP | NP | 4.25 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to NAVD 88 Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | April 2015 | | | | | | | | October 2015 | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 9.51 | - | 14.4 | 7.82 | NP | NP | 7.82 | - | 10.89 | - | 14.73 | 6.44 | NP | NP | 6.44 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.61 | - | 29.66 | 7.72 | NP | NP | 7.72 | - | 10.84 | - | 29.64 | 6.49 | NP | NP | 6.49 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.4 | - | 14.56 | 7.27 | NP | NP | 7.27 | - | 10.23 | - | 14.76 | 6.44 | NP | NP | 6.44 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.35 | - | 29.38 | 7.24 | NP | NP | 7.24 | - | 10.19 | - | 29.42 | 6.40 | NP | NP | 6.40 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.02 | - | 14.97 | 5.80 | NP | NP | 5.80 | - | 6.72 | - | 15.61 | 5.10 | NP | NP | 5.10 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.82 | - | 11.3 | 6.51 | NP | NP | 6.51 | - | 5.13 | - | 11.64 | 5.20 | NP | NP | 5.20 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | - | 4.32 | - | 10.19 | 7.64 | NP | NP | 7.64 | - | 6.27 | - | 10.44 | 5.69 | NP | NP | 5.69 |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | - | 3.62 | - | 9.3 | 6.05 | NP | NP | 6.05 | - | 5.55 | - | 9.48 | 4.12 | NP | NP | 4.12 |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.44 | - | 15.01 | 6.84 | NP | NP | 6.84 | - | 7.14 | - | 15.12 | 6.14 | NP | NP | 6.14 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.16 | - | 29.65 | 6.97 | NP | NP | 6.97 | - | 7.9 | - | 29.67 | 5.23 | NP | NP | 5.23 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.18 | - | 29.76 | 5.77 | NP | NP | 5.77 | - | 6.45 | - | 29.6 | 5.50 | NP | NP | 5.50 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 6.31 | - | 14.31 | 5.33 | NP | NP | 5.33 | - | 7.13 | - | 14.32 | 4.51 | NP | NP | 4.51 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 6.05 | - | 14.83 | 5.44 | NP | NP | 5.44 | - | 6.96 | - | 14.96 | 4.53 | NP | NP | 4.53 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | - | 3.84 | - | 14.04 | 6.34 | NP | NP | 6.34 | - | 5.24 | - | 14.22 | 4.94 | NP | NP | 4.94 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 1.23 | - | 11.4 | 7.73 | NP | NP | 7.73 | - | 2.78 | - | 11.76 | 6.18 | NP | NP | 6.18 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.59 | - | 29.9 | 6.24 | NP | NP | 6.24 | - | 4.58 | - | 30 | 5.25 | NP | NP | 5.25 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | - | 6.52 | - | 32.58 | 6.30 | NP | NP | 6.30 | - | 7.99 | - | 32.7 | 4.83 | NP | NP | 4.83 |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | - | 5.87 | - | 14.44 | 4.71 | NP | NP | 4.71 | - | 6.29 | - | 14.25 | 4.29 | NP | NP | 4.29 |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | - | 6.19 | - | 32.79 | 4.60 | NP | NP | 4.60 | - | 6.68 | - | 32.63 | 4.11 | NP | NP | 4.11 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to NAVD 88 Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | | May 2016 | | | | | | | | October 2016 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 10.18 | - | 14.5 | 7.15 | NP | NP | 7.15 | - | 10.54 | - | 14.5 | 6.79 | NP | NP | 6.79 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 10.22 | - | 29.6 | 7.11 | NP | NP | 7.11 | - | 10.55 | - | 29.8 | 6.78 | NP | NP | 6.78 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.9 | - | 14.54 | 6.77 | NP | NP | 6.77 | - | 10.07 | - | 14.52 | 6.60 | NP | NP | 6.60 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.83 | - | 29.38 | 6.76 | NP | NP | 6.76 | - | 10 | - | 29.48 | 6.59 | NP | NP | 6.59 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.1 | - | 15.4 | 5.72 | NP | NP | 5.72 | - | 6.57 | - | 15.4 | 5.25 | NP | NP | 5.25 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.5 | - | 11.32 | 5.83 | NP | NP | 5.83 | - | 5.01 | - | 11.35 | 5.32 | NP | NP | 5.32 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | - | 6 | - | 10.15 | 5.96 | NP | NP | 5.96 | Decommissioned June 2016 | | | | | | | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | - | 5.21 | - | 9.1 | 4.46 | NP | NP | 4.46 | Decommissioned June 2016 | | | | | | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.75 | - | 14.9 | 6.53 | NP | NP | 6.53 | - | 7 | - | 14.9 | 6.28 | NP | NP | 6.28 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.49 | - | 29.62 | 6.64 | NP | NP | 6.64 | - | 6.72 | - | 29.74 | 6.41 | NP | NP | 6.41 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.01 | - | 29.5 | 5.94 | NP | NP | 5.94 | - | 6.52 | - | 29.57 | 5.43 | NP | NP | 5.43 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 6.45 | - | 14.12 | 5.19 | NP | NP | 5.19 | - | 6.88 | - | 14.15 | 4.76 | NP | NP | 4.76 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 6.05 | - | 14.75 | 5.44 | NP | NP | 5.44 | - | 6.66 | - | 14.72 | 4.83 | NP | NP | 4.83 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | 4.47 | 4.55 | - | 14 | 5.63 | 0.08 | NP | 5.70 | 5.05 | 5.1 | - | 14 | 5.08 | 0.05 | NP | 5.12 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 2.2 | - | 11.38 | 6.76 | NP | NP | 6.76 | - | 2.62 | - | 11.45 | 6.34 | NP | NP | 6.34 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.05 | - | 29.8 | 5.78 | NP | NP | 5.78 | Unable to open | | | | | | | |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | - | 7.45 | - | 32.6 | 5.37 | NP | NP | 5.37 | Decommissioned June 2016 | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | - | 5.93 | - | 14 | 4.65 | NP | NP | 4.65 | Decommissioned June 2016 | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | - | 6.75 | - | 32.25 | 4.04 | NP | NP | 4.04 | Decommissioned June 2016 | | | | | | | |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to NAVD 88 Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | May 2017 | | | | | | | March 2018 | | | | | | | November 2018 | | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|--|---------------------|---------------------|-----------------------|---------------------|------------------------|--------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 9.11 | - | 14.43 | 8.22 | NP | NP | 8.22 | - | 8.88 | - | 14.45 | 8.45 | NP | NP | 8.45 | - | 8.01 | - | 14.43 | 9.32 | NP | NP | 9.32 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.21 | - | 29.64 | 8.12 | NP | NP | 8.12 | - | 8.99 | - | 29.80 | 8.34 | NP | NP | 8.34 | - | 8.19 | - | 29.59 | 9.14 | NP | NP | 9.14 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.06 | - | 14.53 | 7.61 | NP | NP | 7.61 | - | 8.90 | - | 14.77 | 7.77 | NP | NP | 7.77 | - | 7.98 | - | 14.55 | 8.69 | NP | NP | 8.69 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.06 | - | 29.32 | 7.53 | NP | NP | 7.53 | - | 8.84 | - | 29.79 | 7.75 | NP | NP | 7.75 | - | 7.95 | - | 29.37 | 8.64 | NP | NP | 8.64 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.97 | - | 15.42 | 5.85 | NP | NP | 5.85 | - | 5.15 | - | 14.91 | 6.67 | NP | NP | 6.67 | - | 4.52 | - | 15.41 | 7.30 | NP | NP | 7.30 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | Unable to open | | | | | | | - | 2.91 | - | 29.70 | 7.42 | NP | NP | 7.42 | - | 3.05 | - | 29.87 | 7.28 | NP | NP | 7.28 | |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.13 | - | 14.9 | 7.15 | NP | NP | 7.15 | - | 5.95 | - | 14.86 | 7.33 | NP | NP | 7.33 | - | 5.16 | - | 14.90 | 8.12 | NP | NP | 8.12 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 5.91 | - | 29.71 | 7.22 | NP | NP | 7.22 | - | 5.60 | - | 29.95 | 7.53 | NP | NP | 7.53 | - | 4.88 | - | 29.62 | 8.25 | NP | NP | 8.25 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 7.60 | - | 29.50 | 4.35 | NP | NP | 4.35 | - | 5.35 | - | 29.80 | 6.60 | NP | NP | 6.60 | - | 4.65 | - | 29.52 | 7.30 | NP | NP | 7.30 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.80 | - | 14.1 | 5.84 | NP | NP | 5.84 | - | 5.41 | - | 14.15 | 6.23 | NP | NP | 6.23 | - | 4.79 | - | 14.11 | 6.85 | NP | NP | 6.85 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.61 | - | 14.65 | 5.88 | NP | NP | 5.88 | - | 5.25 | - | 14.70 | 6.24 | NP | NP | 6.24 | - | 4.57 | - | 14.75 | 6.92 | NP | NP | 6.92 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | 3.67 | 3.69 | - | 13.97 | 6.49 | 0.02 | NP | 6.51 | 3.23 | 3.59 | - | 14.02 | 6.59 | 0.36 | NP | 6.90 | 2.55 | 2.55 | - | 13.96 | 7.63 | trace | NP | 7.63 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 1.20 | - | 11.36 | 7.76 | NP | NP | 7.76 | Unable to locate well under snow cover | | | | | | | - | 0.90 | - | 11.05 | 8.06 | NP | NP | 8.06 | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.64 | - | 11.25 | 6.19 | NP | NP | 6.19 | - | 3.21 | - | 30 | 6.62 | NP | NP | 6.62 | - | 2.88 | - | 29.87 | 6.95 | NP | NP | 6.95 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |

Notes
Well is located in the Natural Gas Regulator portion of the Property
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD 88 Datum
NP - Indicates No Product observed.
NS - Not Surveyed
Blanks indicate no measurement collected on that particular day.
Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2019 | | | | | | | | November 2019 | | | | | | | | June 2020 | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 9.2 | - | 14.4 | 8.13 | NP | NP | 8.13 | - | 9.9 | - | 14.43 | 7.43 | NP | NP | 7.43 | - | 9.78 | - | 14.46 | 7.55 | NP | NP | 7.55 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.28 | - | 29.50 | 8.05 | NP | NP | 8.05 | - | 9.93 | - | 29.74 | 7.40 | NP | NP | 7.40 | - | 9.82 | - | 29.6 | 7.51 | NP | NP | 7.51 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 8.89 | - | 14.5 | 7.78 | NP | NP | 7.78 | - | 9.57 | - | 14.63 | 7.10 | NP | NP | 7.10 | - | 9.38 | - | 14.63 | 7.29 | NP | NP | 7.29 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 8.79 | - | 29.45 | 7.80 | NP | NP | 7.80 | - | 9.47 | - | 29.65 | 7.12 | NP | NP | 7.12 | - | 9.33 | - | 29.61 | 7.26 | NP | NP | 7.26 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 4.96 | - | 15.45 | 6.86 | NP | NP | 6.86 | - | 5.63 | - | 15.55 | 6.19 | NP | NP | 6.19 | - | 5.37 | - | 15.53 | 6.45 | NP | NP | 6.45 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.32 | - | 11.32 | 7.01 | NP | NP | 7.01 | - | 4.19 | - | 11.48 | 6.14 | NP | NP | 6.14 | - | 3.86 | - | 11.34 | 6.47 | NP | NP | 6.47 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 5.9 | - | 14.91 | 7.38 | NP | NP | 7.38 | - | 6.45 | - | 14.96 | 6.83 | NP | NP | 6.83 | - | 6.3 | - | 14.93 | 6.98 | NP | NP | 6.98 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 5.63 | - | 29.64 | 7.50 | NP | NP | 7.50 | - | 6.57 | - | 30.17 | 6.56 | NP | NP | 6.56 | - | 6.4 | - | 29.93 | 6.73 | NP | NP | 6.73 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.00 | - | 29.67 | 6.95 | NP | NP | 6.95 | - | 5.78 | - | 29.84 | 6.17 | NP | NP | 6.17 | - | 5.58 | - | 29.54 | 6.37 | NP | NP | 6.37 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.30 | - | 14.15 | 6.34 | NP | NP | 6.34 | - | 5.96 | - | 14.25 | 5.68 | NP | NP | 5.68 | - | 5.73 | - | 14.16 | 5.91 | NP | NP | 5.91 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.24 | - | 14.72 | 6.25 | NP | NP | 6.25 | - | 5.86 | - | 14.71 | 5.63 | NP | NP | 5.63 | - | 5.7 | - | 14.77 | 5.79 | NP | NP | 5.79 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | 3.55 | 3.6 | - | 14.04 | 6.58 | 0.05 | NP | 6.62 | 4.28 | 4.28 | - | 14.11 | 5.90 | trace | NP | 7.63 | 4.09 | 4.09 | - | 14.07 | 6.09 | trace | NP | 6.09 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 1.5 | - | 10.98 | 7.46 | NP | NP | 7.46 | - | 2.72 | - | 11.1 | 6.24 | NP | NP | 6.24 | - | 2.44 | - | 11 | 6.52 | NP | NP | 6.52 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.32 | - | 30 | 6.51 | NP | NP | 6.51 | - | 3.65 | - | 30.25 | 6.18 | NP | NP | 6.18 | - | 3.45 | - | 30.01 | 6.38 | NP | NP | 6.38 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |

Notes
Well is located in the Natural Gas Regulator portion of the Property
Well is located in the CNG Fueling Station portion of the Property
Elevations are relative to NAVD 88 Datum
NP - Indicates No Product observed.
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**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | November 2020 | | | | | | | June 2021 | | | | | | | November 2021 | | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|--------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 9.8 | - | 14.58 | 7.53 | NP | NP | 7.53 | - | 10.7 | - | 14.45 | 6.63 | NP | NP | 6.63 | - | 9.23 | - | 14.48 | 8.10 | NP | NP | 8.1 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.95 | - | 29.65 | 7.38 | NP | NP | 7.38 | - | 9.76 | - | 29.37 | 7.57 | NP | NP | 7.57 | - | 9.44 | - | 29.37 | 7.89 | NP | NP | 7.89 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.48 | - | 14.61 | 7.19 | NP | NP | 7.19 | - | 9.4 | - | 14.51 | 7.27 | NP | NP | 7.27 | - | 8.99 | - | 14.49 | 7.68 | NP | NP | 7.68 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.43 | - | 29.3 | 7.16 | NP | NP | 7.16 | - | 9.32 | - | 29.35 | 7.27 | NP | NP | 7.27 | - | 8.92 | - | 29.36 | 7.67 | NP | NP | 7.67 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.6 | - | 15.4 | 6.22 | NP | NP | 6.22 | - | 5.29 | - | 14.25 | 6.53 | NP | NP | 6.53 | - | 5.03 | - | 14.65 | 6.79 | NP | NP | 6.79 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.17 | - | 11.35 | 6.16 | NP | NP | 6.16 | - | 3.76 | - | 11.35 | 6.57 | NP | NP | 6.57 | - | 3.52 | - | 11.34 | 6.81 | NP | NP | 6.81 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.03 | - | 15.05 | 7.25 | NP | NP | 7.25 | - | 6.34 | - | 14.94 | 6.94 | NP | NP | 6.94 | - | 5.92 | - | 14.66 | 7.36 | NP | NP | 7.36 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.36 | - | 30.3 | 6.77 | NP | NP | 6.77 | - | 6.94 | - | 30.08 | 6.19 | NP | NP | 6.19 | - | 6.07 | - | 29.64 | 7.06 | NP | NP | 7.06 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.71 | - | 29.6 | 6.24 | NP | NP | 6.24 | - | 5.75 | - | 29.6 | 6.2 | NP | NP | 6.2 | - | 5.11 | - | 29.62 | 6.84 | NP | NP | 6.84 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 4.85 | - | 14.2 | 6.79 | NP | NP | 6.79 | - | 5.72 | - | 14.16 | 5.92 | NP | NP | 5.92 | - | 5.35 | - | 14.16 | 6.29 | NP | NP | 6.29 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.7 | - | 14.7 | 5.79 | NP | NP | 5.79 | - | 5.6 | - | 14.74 | 5.89 | NP | NP | 5.89 | - | 5.24 | - | 14.76 | 6.25 | NP | NP | 6.25 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | - | 4.14 | - | 14.1 | 6.04 | NP | NP | 6.04 | Trace | 5.72 | - | 14.05 | 4.46 | NP | NP | 4.46 | - | 3.45 | - | 14.04 | 6.73 | NP | NP | 6.73 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | Unable to access well | | | | | | | Unable to access well | | | | | | | Unable to access well | | | | | | | | | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.85 | - | 30.1 | 5.98 | NP | NP | 5.98 | - | 3.4 | - | 30.14 | 6.43 | NP | NP | 6.43 | - | 3.8 | - | 30.09 | 6.03 | NP | NP | 6.03 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | | |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located in the CNG Fueling Station portion of the Property
 Elevations are relative to NAVD 88 Datum
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE P-4 - GROUNDWATER AND NAPL GAUGING
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2022 | | | | | | | November 2022 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | RCA-12R | 17.87 | 17.33 | 17.87 | Roadbox | Shallow | 5/30/2014 | 15.24 | 5 - 15 | NP | NP | - | 9.7 | - | 14.95 | 6.97 | NP | NP | 6.97 | - | 9.64 | - | 12.06 | 7.69 | NP | NP | 7.69 |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.75 | - | 29.25 | 6.92 | NP | NP | 6.92 | - | 9.7 | - | 29.35 | 7.63 | NP | NP | 7.63 |
| CNG | GZ-302S | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.2 | - | 14.45 | 7.47 | NP | NP | 7.47 | - | 9.23 | - | 14.53 | 7.44 | NP | NP | 7.44 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.1 | - | 29.25 | 7.49 | NP | NP | 7.49 | - | 9.18 | - | 29.4 | 7.41 | NP | NP | 7.41 |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.45 | - | 14.65 | 6.37 | NP | NP | 6.37 | - | 5.75 | - | 14.87 | 6.07 | NP | NP | 6.07 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.9 | - | 11.25 | 6.43 | NP | NP | 6.43 | - | 4.12 | - | 11.31 | 6.21 | NP | NP | 6.21 |
| NG | VHB-3 | 11.84 | 11.96 | 9.76 | Standpipe | Shallow | 1/14/2002 | 7.90 | 2 - 10 | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | U-1 | NS | 9.67 | 7.71 | Standpipe | Shallow | Unknown | 9.08 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 9.2 | - | 14.45 | 4.08 | NP | NP | 4.08 | - | 13.11 | - | 14.84 | 0.17 | NP | NP | 0.17 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.1 | - | 29.95 | 7.03 | NP | NP | 7.03 | - | 6.22 | - | 29.93 | 6.91 | NP | NP | 6.91 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.65 | - | 29.6 | 6.3 | NP | NP | 6.3 | - | 6.37 | - | 29.51 | 5.58 | NP | NP | 5.58 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.85 | - | 19.15 | 5.79 | NP | NP | 5.79 | - | 6.11 | - | 14.13 | 5.53 | NP | NP | 5.53 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.7 | - | 19.75 | 5.79 | NP | NP | 5.79 | - | 5.97 | - | 14.82 | 5.52 | NP | NP | 5.52 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.08 | NP | - | 4.2 | - | 13.9 | 5.98 | NP | NP | 5.98 | Trace | 4.22 | - | 13.8 | 5.96 | NP | NP | 5.96 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | Unable to access well | | | | | | | Unable to access well | | | | | | | | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.55 | - | 29.8 | 6.28 | NP | NP | 6.28 | - | 4.08 | - | 29.88 | 5.75 | NP | NP | 5.75 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312S | 10.77 | 10.58 | 8.64 | Standpipe | Shallow | 5/23/2014 | 13.18 | 3 - 13 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to NAVD 88 Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE P-5 - HISTORIC LNAPL THICKNESSES - VHB-1, VHB-2, and VHB-3
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Date | 06/20/02 | 09/12/02 | Sept 2003 | Sept 2005 | Aug 2011 | Feb 2012 | July 2012 | Feb 2013 | Nov 2013 | June 2014 | July 2, 2014 | July 23, 2014 | October 2014 | April 2015 |
|---------|--|----------|-----------|-----------|----------|----------|-----------|----------|----------|-----------|--------------|---------------|--------------|------------|
| Well ID | Natural Gas Regulation Facility | | | | | | | | | | | | | |
| VHB-1 | trace | trace | trace | trace | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| VHB-2 | ND | ND | ND | trace | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| VHB-3 | trace | trace | trace | trace | trace | ND | ND | ND | ND | ND | ND | ND | ND | ND |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located in the CNG Fueling Station portion of the Property

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

NG - Not Gauged

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - seen or less than 0.01 feet

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

TABLE P-5 - HISTORIC LNAPL THICKNESSES - VHB-1, VHB-2, and VHB-3
NORTHERN AND WESTERN SITE PERIMETER DATA GAP
642 Allens Avenue
Providence, Rhode Island

| | Natural Gas Regulation Facility | | | | | | | | | | | | | |
|---------|---------------------------------|----------|--------------|----------|------------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|
| Date | October 2015 | May 2016 | October 2017 | May 2017 | March 2018 | November 2018 | June 2019 | November 2019 | June 2020 | November 2020 | June 2021 | November 2021 | June 2022 | November 2022 |
| Well ID | Natural Gas Regulation Facility | | | | | | | | | | | | | |
| VHB-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| VHB-2 | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| VHB-3 | ND | ND | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |

Notes:

Well is located in the Natural Gas Regulator portion of the Property
Well is located in the CNG Fueling Station portion of the Property
Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

NI - Not Installed Yet
Dest - Destroyed
trace - seen or less than 0.01 feet

NG - Not Gauged
ND - Not Detected

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

TABLE P-6 - LNAPL GAUGING GZ-307S
NORTHERN AND WESTERN SITE PERIMETER DATA GAP
642 Allens Avenue
Providence, Rhode Island

File No. 03.00033554.01
1/5/2024

| Well ID | Date | Depth to LNAPL | Depth to Water (feet) | LNAPL Thickness (feet) | Estimated Volume Purged (gallons) |
|------------|------------|----------------|-----------------------|------------------------|-----------------------------------|
| GZ-307S | 6/3/2014 | ND | 4.84 | ND | NR |
| | 6/6/2014 | ND | 4.82 | ND | NR |
| | 6/16/2014 | ND | 4.73 | ND | NR |
| | 7/2/2014 | ND | 4.86 | ND | NR |
| | 7/23/2014 | ND | 4.85 | ND | NR |
| | 10/30/2014 | ND | 5.09 | ND | NR |
| | 4/9/2015 | ND | 3.84 | ND | NR |
| | 10/14/2015 | ND | 5.24 | ND | NR |
| | 5/18/2016 | 4.47 | 4.55 | 0.08 | NR |
| | 7/26/2016 | 5.10 | 5.36 | 0.26 | NR |
| | 8/30/2016 | 3.95 | 4.00 | 0.05 | NR |
| | 9/16/2016 | 5.26 | 5.59 | 0.33 | NR |
| | 10/28/2016 | 5.05 | 5.10 | 0.05 | NR |
| | 11/30/2016 | 4.80 | 4.84 | 0.04 | NR |
| | 12/13/2016 | 4.95 | 5.04 | 0.09 | NR |
| | 5/30/2017 | 3.67 | 3.69 | 0.02 | NR |
| | 1/24/2018 | 3.28 | 3.50 | 0.22 | NR |
| | 2/21/2018 | 3.23 | 3.52 | 0.29 | NR |
| | 3/20/2018 | 3.23 | 3.59 | 0.36 | NR |
| | 4/26/2018 | 5.98 | 6.98 | 1.00 | NR |
| | 5/15/2018 | 3.97 | 4.47 | 0.50 | trace |
| | 6/28/2018 | 4.80 | 4.88 | 0.08 | NR |
| | 8/30/2018 | 4.07 | 4.54 | 0.47 | NR |
| | 9/5/2018 | 4.67 | 4.75 | 0.08 | 1 |
| | 10/1/2018 | 3.19 | 3.20 | 0.01 | NR |
| | 10/30/2018 | 3.54 | 3.55 | 0.01 | NR |
| | 11/14/2018 | 2.55 | 2.55 | trace | NR |
| | 12/19/2018 | 3.64 | 3.64 | trace | NR |
| | 1/30/2019 | 3.04 | 3.04 | trace | NR |
| | 2/27/2019 | 3.12 | 3.15 | 0.03 | NR |
| | 3/20/2019 | 3.14 | 3.14 | trace | NR |
| | 4/22/2019 | 3.70 | 3.70 | trace | NR |
| | 5/31/2019 | 3.75 | 3.75 | trace | NR |
| | 6/26/2019 | 3.72 | 3.72 | trace | NR |
| | 7/25/2019 | 3.70 | 3.70 | trace | NR |
| | 8/22/2019 | 4.34 | 4.34 | trace | NR |
| | 9/27/2019 | 5.57 | 5.70 | 0.13 | NR |
| | 10/21/2019 | 4.28 | 4.28 | trace | NR |
| | 11/21/2019 | 4.10 | 4.17 | 0.07 | NR |
| | 12/18/2019 | 2.59 | 2.68 | 0.09 | NR |
| 1/24/2020 | 3.95 | 3.99 | 0.04 | NR | |
| 2/24/2020 | 3.90 | 3.90 | trace | NR | |
| 3/26/2020 | 3.38 | 3.38 | trace | NR | |
| 4/23/2020 | 3.08 | 3.08 | trace | NR | |
| 5/22/2020 | 3.60 | 3.60 | trace | NR | |
| 6/9/2020 | 4.09 | 4.09 | trace | NR | |
| 7/17/2020 | 3.47 | 3.47 | trace | NR | |
| 8/20/2020 | 4.82 | 4.83 | 0.01 | NR | |
| 9/22/2020 | 4.90 | 4.90 | trace | NR | |
| 10/26/2020 | 4.50 | 4.50 | trace | NR | |
| 11/23/2020 | ND | 4.14 | ND | NR | |
| 12/11/2020 | 3.12 | 3.12 | trace | NR | |

Notes: ND = Not Detected
NR = Not Recovered
trace = <0.01 feet product

TABLE P-6 - LNAPL GAUGING GZ-307S
NORTHERN AND WESTERN SITE PERIMETER DATA GAP
 642 Allens Avenue
 Providence, Rhode Island

File No. 03.00033554.01
 1/5/2024

| Well ID | Date | Depth to LNAPL | Depth to Water (feet) | LNAPL Thickness (feet) | Estimated Volume Purged (gallons) |
|------------|------------|----------------|-----------------------|------------------------|-----------------------------------|
| GZ-307S | 1/22/2021 | ND | 3.45 | trace | NR |
| | 2/9/2021 | ND | 3.85 | trace | NR |
| | 3/15/2021 | ND | 4.10 | trace | NR |
| | 4/20/2021 | ND | 3.70 | trace | NR |
| | 5/21/2021 | ND | 4.00 | trace | NR |
| | 6/23/2021 | ND | 3.97 | trace | NR |
| | 7/26/2021 | ND | 3.43 | trace | NR |
| | 8/13/2021 | 3.80 | 3.80 | trace | NR |
| | 9/27/2021 | 4.10 | 4.13 | 0.03 | NR |
| | 10/18/2021 | ND | 4.16 | trace | NR |
| | 11/16/2021 | ND | 3.45 | ND | NR |
| | 12/18/2021 | 4.33 | 4.33 | trace | NR |
| | 1/21/2022 | ND | 4.19 | ND | NR |
| | 2/17/2022 | 3.14 | 3.14 | Trace | NR |
| | 3/30/2022 | ND | 3.44 | Trace | NR |
| | 4/27/2022 | ND | 4.75 | ND | NR |
| | 6/13/2022 | ND | 4.20 | ND | NR |
| | 7/7/2022 | ND | 3.80 | ND | NR |
| | 8/8/2022 | 4.91 | 4.91 | Trace | NR |
| | 9/9/2022 | ND | 4.91 | ND | NR |
| 11/3/2022 | 4.04 | 4.04 | Trace | NR | |
| 6/13/2022 | ND | 4.20 | ND | NR | |
| 11/24/2022 | 4.22 | 4.22 | trace | NR | |

Notes: ND = Not Detected
 NR = Not Recovered
 trace = <0.01 feet product

**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | RCA-1 | | | | | | | | | | | | | | | |
|-----------------------------------|---------------------------------------|---------------------------------|-------|-----------------|---------------|------------------|-------------------|-------------------|---------------|------------------|--------------|----------------|--------------|------------------|--------------|-----------------|---------------|---------------|---------------|
| | | | | October 1994 | March 1996 | November 2001 | September 2003 | September 2005 | March 2008 | December 2009 | June 2010 | August 2011 | July 2012 | November 2013 | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0005 | ND | ND | 0.0004 | 0.0003 | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | 0.005 | 0.005 | 0.0036 | 0.00484 | 0.022 | ND | 0.0031 | ND | 0.0038 | 0.0038 | 0.0036 | 0.0033 | 0.0028 | 0.0016 | 0.0028 | 0.0028 |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | 0.013 | 0.0165 | 0.0103 | 0.0127 | 0.0056 | 0.0042 | 0.0011 | 0.001 |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | 0.00143 | 0.0021 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | ND | 0.001 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0006 | ND | ND | 0.0006 | 0.0006 | ND | ND |
| Methylene Chloride | NE | NE | mg/L | 0.005 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | 0.144 | 0.112 | 0.0698 | 0.0143 | ND | 0.0051 | ND | ND | 0.0009 | 0.0124 | ND | ND | 0.0052 | 0.0251 | 0.0141 |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | 0.002 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0002 | ND | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.001 | ND | 0.0074 | 0.0067 | 0.0059 | 0.0028 |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | 0.0011 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

Notes:

ND - Not Detected
NA - Not Analyzed

NE - Not Established
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Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | RCA-1 | | | | | | | | | | | | | | | |
|--|---------------------------------------|---------------------------------|-------|-----------------|---------------|------------------|-------------------|-------------------|---------------|------------------|--------------|----------------|--------------|------------------|--------------|-----------------|-------------|-------------|---------------|
| | | | | October 1994 | March 1996 | November 2001 | September 2003 | September 2005 | March 2008 | December 2009 | June 2010 | August 2011 | July 2012 | November 2013 | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | 0.022 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| 2-Methylnaphthalene | NE | NE | mg/L | 0.038 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| 2-Methylphenol | NE | NE | mg/L | 0.011 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| 4-Methylphenol | NE | NE | mg/L | 0.024 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Acenaphthene | NE | NE | mg/L | 0.012 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Acenaphthylene | NE | NE | mg/L | 0.029 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Antracene | NE | NE | mg/L | 0.013 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Benzo (a) Anthracene | NE | NE | mg/L | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Carbazole | NE | NE | mg/L | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Chrysene | NE | NE | mg/L | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Dibenzofuran | NE | NE | mg/L | 0.022 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Fluoranthene | NE | NE | mg/L | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Fluorene | NE | NE | mg/L | 0.024 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Naphthalene | NE | NE | mg/L | 0.169 | ND | 0.0133 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Phenanthrene | NE | NE | mg/L | 0.066 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Phenol | NE | NE | mg/L | 0.01 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Pyrene | NE | NE | mg/L | 0.024 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Inorganics | | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | 1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |

Notes:

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Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
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**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | | | | | RCA-2 | | RCA-12 | | | | | | | | |
|-----------------------------------|---------------------------------------|---------------------------------|-------|------------------|------------------|------------------|------------------|-----------------|---------------|-----------------|---------------|---------------|-----------------|---------------|-----------|---------------|------------------|------------------|
| | | | | November 2019 | November 2020 | November 2021 | November 2022 | October 1994 | March 1996 | October 1994 | March 1996 | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | ND | 0.048 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | ND | ND | ND | 0.0014 | ND | 0.024 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | ND | ND | 0.0013 | 0.0051 | ND | ND | ND | ND | 0.0127 | ND | 0.0099 | ND | 0.0024 | 0.0178 | 0.0201 |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | 0.042 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | 0.009 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0006 | 0.0006 | ND | ND | ND | ND |
| Methylene Chloride | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | ND | ND | 0.0059 | ND | 0.162 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | 0.006 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | 0.001 | ND | 0.0011 | ND | ND | 0.002 | 0.0016 |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | ND | ND | 0.006 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | 0.0066 | ND | 0.0063 | 0.0014 | 0.0026 | 0.0066 | 0.0059 |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | ND | ND | 0.0017 | ND | ND | ND | ND | 0.0022 | 0.0006 | 0.0022 | ND | ND | 0.001 | 0.0014 |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | 0.018 | 0.076 | ND | ND | ND | ND | ND | ND | ND | ND | ND |

Notes:

ND - Not Detected NE - Not Established
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Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | | | | | RCA-2 | | RCA-12 | | | | | | | | |
|--|---------------------------------------|---------------------------------|-------|------------------|------------------|------------------|------------------|-----------------|---------------|-----------------|---------------|--------------|-----------------|----------|----------|---------------|------------------|------------------|
| | | | | November 2019 | November 2020 | November 2021 | November 2022 | October 1994 | March 1996 | October 1994 | March 1996 | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Benzo (a) Anthracene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Carbazole | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | NA | NA | NA | NA | 2.8 | NA | ND | NA | NA | NA | NA | NA | NA | NA |

Notes:

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**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | | | D91 March 2000 | E85 March 2000 | F29 March 2000 | VHB-1 | | | | | | | | |
|-----------------------------------|---------------------------------------|---------------------------------|-------|------------------|------------------|----------------------|----------------------|----------------------|--------------|-----------|-----------|------------------|--------------|-----------------|----------|---------------|------------------|
| | | | | November 2021 | November 2022 | | | | June 2002 | Sept 2003 | Sept 2005 | November 2013 | June 2014 | October 2015 | May 2016 | March 2018 | November 2019 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | NA | NA | NA | 0.0058 | 0.00128 | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | NA | NA | NA | 0.0014 | ND | ND | ND | ND | 0.0004 | 0.0579 | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | NA | NA | NA | ND | ND | ND | ND | ND | 0.0001 | 0.0161 | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | NA | NA | NA | ND | ND | ND | ND | ND | ND | 0.0005 | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | NA | NA | NA | ND | ND | ND | ND | ND | ND | 0.0031 | ND | ND |
| Benzene | 0.14 | 18 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0002 | 0.0085 | ND | ND |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | 0.0074 | 0.0162 | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0016 | ND | 0.118 | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | NA | NA | NA | 0.0134 | 0.0123 | 0.0135 | 0.0094 | 0.0118 | 0.0119 | 0.0063 | 0.0061 | 0.0111 |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | NE | NE | mg/L | ND | ND | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | ND | ND | 0.039 | ND | 0.0109 | 0.0115 | 0.0045 | 0.0011 | 0.0013 | 0.0016 | 2.23 | ND | ND |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | NA | NA | NA | 0.008 | 0.00358 | 0.0059 | 0.0026 | 0.0024 | 0.0024 | 0.0016 | 0.002 | 0.0014 |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | NA | NA | NA | 0.0052 | 0.00387 | 0.0043 | 0.0031 | 0.0033 | 0.0038 | 0.0004 | 0.0021 | 0.0029 |
| Styrene | 2.2 | 50 | mg/L | ND | ND | NA | NA | NA | ND | ND | ND | ND | ND | ND | 0.0032 | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | NA | NA | NA | ND | ND | ND | ND | ND | 0.001 | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | mg/L | 0.0018 | 0.002 | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0108 | ND | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | mg/L | 0.0078 | 0.0072 | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | 0.0013 | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.001 | 0.0012 | 0.245 | ND | ND |

Notes:
 ND - Not Detected NE - Not Established
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**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | | | D91 March 2000 | E85 March 2000 | F29 March 2000 | VHB-1 | | | | | | | | |
|--|---------------------------------------|---------------------------------|-------|------------------|------------------|----------------------|----------------------|----------------------|--------------|-----------|-----------|------------------|--------------|-----------------|----------|---------------|------------------|
| | | | | November 2021 | November 2022 | | | | June 2002 | Sept 2003 | Sept 2005 | November 2013 | June 2014 | October 2015 | May 2016 | March 2018 | November 2019 |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo (a) Anthracene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Carbazole | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | | NA | NA | NA | ND | ND | ND | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | | NA | NA | NA | 0.804 | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

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**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | VHB-3 | | | | | | | | | | | VHE | | |
|-----------------------------------|---------------------------------------|---------------------------------|-------|------------------|------------------|------------------|-----------|-------------------|-------------------|----------------|-----------|------------------|-----------|-----------------|----------|-----------|-------------------|
| | | | | November 2020 | November 2021 | November 2022 | June 2002 | September 2003 | September 2005 | August 2011 | July 2012 | November 2013 | June 2014 | October 2015 | May 2016 | June 2002 | September 2003 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | ND | 0.0068 | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0196 | 0.0117 | 0.0028 | ND | ND | ND | ND | ND | ND | ND | 0.0021 |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0062 | 0.00437 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | 0.00279 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | 0.016 | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | ND | ND | ND | 0.0085 | 0.0196 | 0.0044 | 0.0031 | ND | 0.0013 | ND | ND | ND | ND | ND |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | 0.0027 | 0.00369 | 0.0013 | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | 0.0094 | 0.0087 | ND | ND | 0.003 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | ND | 0.0012 | 1.15 | 0.844 | 0.42 | 0.02 | ND | 0.0068 | ND | ND | 0.0008 | 0.073 | 0.0115 |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | 0.0014 | ND | 0.0011 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | mg/L | 0.0026 | 0.0021 | 0.0026 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | 0.0025 | 0.00369 | 0.001 | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | 0.0146 | 0.0165 | 0.0037 | ND | ND | ND | ND | ND | ND | 0.0026 | ND |

Notes:

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NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | VHB-3 | | | | | | | | | | | VHB | | |
|--|---------------------------------------|---------------------------------|-------|------------------|------------------|------------------|-----------|-------------------|-------------------|----------------|-----------|------------------|-----------|-----------------|----------|-----------|-------------------|
| | | | | November 2020 | November 2021 | November 2022 | June 2002 | September 2003 | September 2005 | August 2011 | July 2012 | November 2013 | June 2014 | October 2015 | May 2016 | June 2002 | September 2003 |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo (a) Anthracene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Carbazole | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.013 |
| Chrysene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | NA | NA | 0.244 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | 1.68 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1.35 |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:

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Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | -5 | |
|--|---------------------------------------|---------------------------------|-------|---------------|-------------------|
| | | | | March 2008 | September 2005 |
| Semi Volatile Organic Compounds (SVOCs) | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | NA |
| Antracene | NE | NE | mg/L | NA | NA |
| Benzo (a) Anthracene | NE | NE | mg/L | NA | NA |
| Carbazole | NE | NE | mg/L | NA | NA |
| Chrysene | NE | NE | mg/L | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | NA |
| Fluoranthene | NE | NE | mg/L | NA | NA |
| Fluorene | NE | NE | mg/L | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | NA |
| Phenol | NE | NE | mg/L | NA | NA |
| Pyrene | NE | NE | mg/L | NA | NA |
| Inorganics | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA |
| Total Petroleum Hydrocarbons | | | | | |
| TPH | NE | NE | mg/L | NA | NA |

Notes:

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Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | GZ-301D | | | | | | | | | GZ-302S | GZ-302D | GZ-303S | GZ-303D | |
|-----------------------------------|---------------------------------------|---------------------------------|-------|-----------|-----------------|----------|----------|---------------|------------------|------------------|------------------|------------------|-----------|-----------|--------------|-----------|-----------|
| | | | | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 | November 2021 | November 2022 | June 2014 | June 2014 | June 2014 | June 2014 | June 2014 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | ND | 0.0002 | 0.0002 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0053 |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | ND | 0.0272 | 0.0003 | 0.0016 | 0.0012 | ND | ND | ND | ND | 0.0172 | 0.0057 | 0.021 | 0.004 | 0.016 |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.046 |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | mg/L | ND | 0.0039 | 0.0039 | ND | ND | ND | ND | ND | ND | 0.0289 | 0.0465 | ND | 0.0277 | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | mg/L | ND | 0.0004 | 0.0004 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | mg/L | ND | 0.012 | ND | ND | ND | ND | ND | ND | ND | 0.0128 | 0.0197 | ND | 0.0125 | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | 0.0038 | 0.0007 | 0.0019 | 0.0014 | ND | ND | ND | ND | ND | ND | 0.007 | ND | ND |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

Notes:

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1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
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**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | GZ-301D | | | | | | | | | GZ-302S | GZ-302D | GZ-303S | GZ-303D |
|--|---------------------------------------|---------------------------------|-------|-----------|-----------------|----------|----------|---------------|------------------|------------------|------------------|------------------|-----------|-----------|-----------|-----------|
| | | | | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 | November 2021 | November 2022 | June 2014 | June 2014 | June 2014 | June 2014 |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo (a) Anthracene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Carbazole | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:

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**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | GZ-304D | | | | | | | | GZ-305S | GZ-306S | GZ-307S | GZ-308S |
|-----------------------------------|---------------------------------------|---------------------------------|-------|-----------------|----------|----------|---------------|------------------|------------------|------------------|------------------|-----------|-----------|-----------|-----------|
| | | | | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 | November 2021 | November 2022 | June 2014 | June 2014 | June 2014 | June 2014 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | 0.0004 | 0.0003 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | 0.0023 | 0.002 | ND | ND | 0.0016 | 0.002 | 0.0013 | 0.0012 | ND | ND | ND | ND |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | 0.0168 | 0.0148 | ND | ND | 0.0016 | 0.0024 | 0.0016 | 0.0078 | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | 0.0012 | 0.0074 | 0.0241 | 0.0097 |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | 0.0005 | 0.0006 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | 0.0005 | ND | 0.0023 | 0.0232 | ND | 0.0062 | ND | ND | 0.0093 | 0.0104 | 0.0028 |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0036 | 0.0018 |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0024 | 0.0148 | 0.0082 |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0051 | 0.0058 | 0.0024 |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.001 |
| Tetrachloroethene | 0.15 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0019 | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | 0.0002 | 0.0002 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

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NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | GZ-304D | | | | | | | | GZ-305S | GZ-306S | GZ-307S | GZ-308S |
|--|---------------------------------------|---------------------------------|-------|-----------------|----------|----------|---------------|------------------|------------------|------------------|------------------|-----------|-----------|-----------|-----------|
| | | | | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 | November 2021 | November 2022 | June 2014 | June 2014 | June 2014 | June 2014 |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo (a) Anthracene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Carbazole | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:

ND - Not Detected

NE - Not Established

NA - Not Analyzed

N/A - Not Applicable

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Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

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NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | GZ-309D | | | | | | | | | GZ-311D | GZ-312S | GZ-312D |
|-----------------------------------|---------------------------------------|---------------------------------|-------|-----------|-----------------|----------|----------|---------------|------------------|------------------|------------------|------------------|-----------|-----------|-----------|
| | | | | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 | November 2021 | November 2022 | June 2014 | June 2014 | June 2014 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | 0.0002 | ND | ND | ND | ND | ND | ND | 0.0215 | ND | 0.0018 |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | 0.0001 | ND | ND | ND | ND | ND | ND | 0.0082 | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0012 | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.049 | ND | ND |
| Benzene | 0.14 | 18 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0216 | ND | 0.0017 |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.059 | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0044 | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | 0.0112 | 0.0071 | ND | ND | ND | ND | ND | 0.0011 | ND | ND |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0119 |
| Methylene Chloride | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | ND | 0.0009 | 0.0022 | ND | ND | ND | ND | ND | 1.16 | ND | 0.0107 |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | 0.0028 | 0.0019 | ND | ND | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | 0.0033 | 0.0022 | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0044 | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | 0.0007 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | 0.0002 | ND | ND | ND | ND | ND | ND | 0.0068 | ND | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0204 | ND | ND |

Notes:

ND - Not Detected

NE - Not Established

NA - Not Analyzed

N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE P-7 - GROUNDWATER ANALYTICAL DATA
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | GZ-309D | | | | | | | | GZ-311D | GZ-312S | GZ-312D | |
|--|---------------------------------------|---------------------------------|-------|-----------|-----------------|----------|----------|---------------|------------------|------------------|------------------|------------------|-----------|-----------|-----------|
| | | | | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 | November 2021 | November 2022 | June 2014 | June 2014 | June 2014 |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo (a) Anthracene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Carbazole | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:

ND - Not Detected

NE - Not Established

NA - Not Analyzed

N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE P-8 - GROUNDWATER TPH FINGERPRINTING RESULTS
NORTHERN AND WESTERN SITE PERIMETER DATA GAP**

File No. 03.00033554.01

1/5/2024

642 Allens Avenue
Providence, Rhode Island

| | Well ID: Date: Units | RCA-1 March 1996 | RCA-2 March 1996 |
|-------------------------------------|-------------------------------------|-----------------------------|-----------------------------|
| Total Petroleum Hydrocarbons | | | |
| TPH | mg/L | 1 | 2.8 |
| TPH Fingerprint | N/A | Petroleum | Kerosene / Fuel Oil |

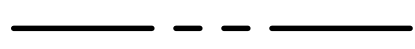
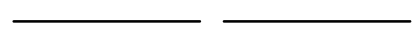

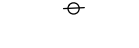
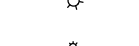
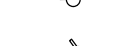
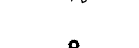







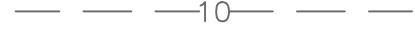
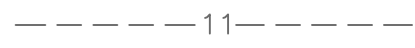
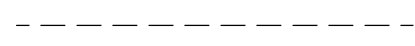

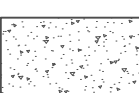



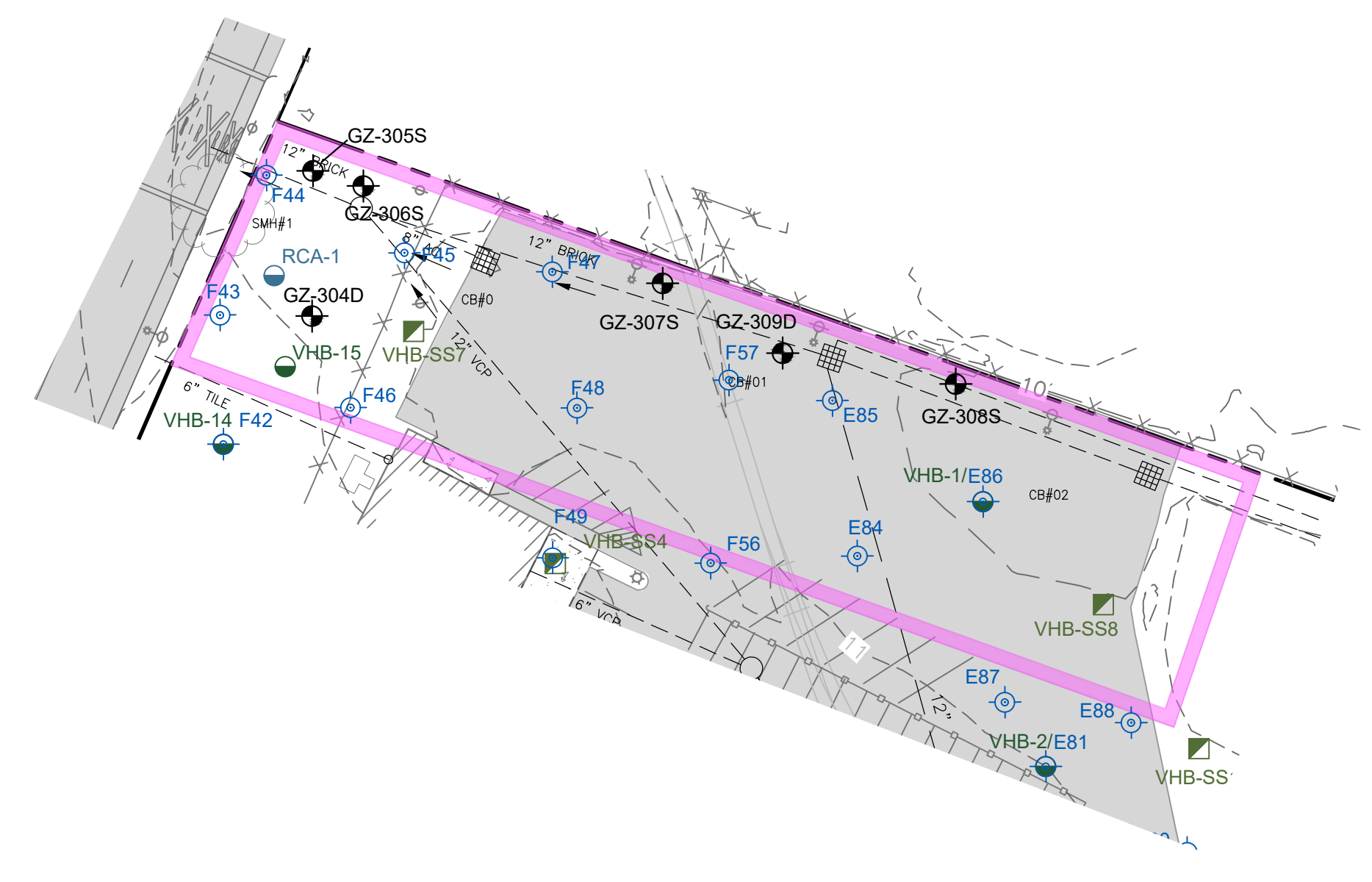
APPENDIX Q

DATA GAP – DRAINAGE REHABILITATION AREA

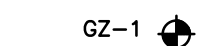
2023 - GZA GeoEnvironmental, Inc. - GZA-VA-LEWA-33554.01-SN-FIGURES-CAD-DWG-33554.01 SITE INVESTIGATION REPORT - ADDENDUM DATA GAP DATA GAP - DRAINAGE REHABILITATION DWG 1 JUNE 1, 2023 10:11 AM USA THERMAL

LEGEND:

-  PROPERTY LINE
-  INTERIOR PROPERTY LINE
-  EXISTING BUILDING
-  UTILITY POLE
-  LIGHT POLE
-  UTILITY POLE WITH LIGHT
-  HYDRANT
-  STEEL POST
-  CATCH BASIN FRAME AND GRATE
-  MANHOLE
-  HISTORICAL STRUCTURE OR FEATURE
-  EDGE OF WATER
-  FENCE
-  RAILROAD TRACKS
-  EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
-  EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
-  SEWER AND STORM DRAIN & ACTIVE STRUCTURES
-  EXISTING PAVEMENT
-  EXISTING CONCRETE
-  APPROXIMATE LIMIT OF DRAINAGE REHABILITATION AREA DATA GAP

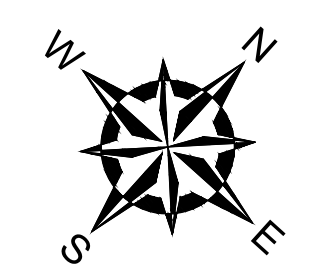


EXPLORATION LEGEND:



-  GZ-500 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021
-  GZ-401 ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015
-  GZ-314 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014
-  VHB-7 ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003
-  F47 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000
-  1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999
-  RHB-1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998
-  RCA-40 ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996
-  TP-301 ENVIRONMENTAL TEST PITS OBSERVED BY GZA IN 2014
-  VHB TP-101 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
-  TP-39 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
-  ETP-4 ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996
-  SS-301 SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014
-  VHB-SS2 SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003
-  SU-6 No.9 SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995
-  RSS-1 SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995
-  CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
-  RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
-  CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
-  ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
-  PRV-1 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019
-  B-211 GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016
-  GZ-3 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016
-  PP-2 GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015
-  SB-01 GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WA) IN 2015
-  GZA-206 GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
-  GZ-1 GEOTECHNICAL BORING OBSERVED BY GZA IN 2004
-  SWBL13 GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995
-  B-207 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973
-  B-25 GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972
-  PGC-8 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912
-  W155 CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999

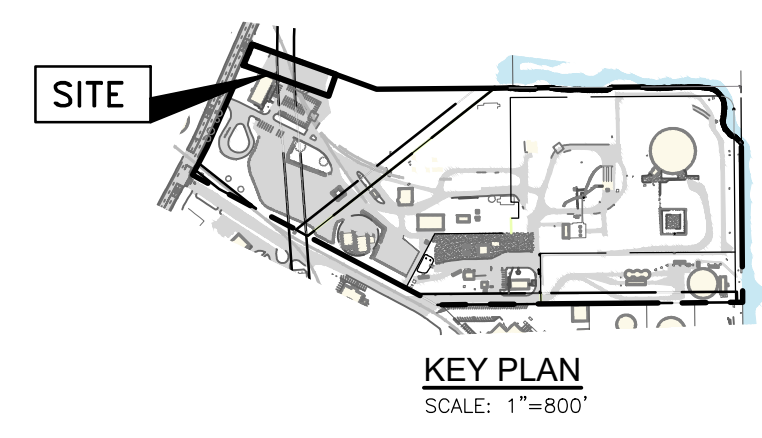
NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

**DRAFT COPY
ISSUED FOR REVIEW**



THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

| | | | |
|---|--|---|---|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | | | |
| DATA GAP: EXPLORATION LOCATION PLAN DRAINAGE REHABILITATION AREA | | | |
| PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists <small>www.gza.com</small> | | PREPARED FOR:  Rhode Island Energy <small>RIE.com</small> | |
| PROJ MGR: SH DESIGNED BY: SH DATE: JUNE, 2023 | REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO.: 33554.01 | CHECKED BY: JJC SCALE: AS NOTED REVISION NO.: 0 | DRAWING Q-1 SHEET NO. 1 OF 1 |



| RESOURCE CONTROLS | | | | | TEST BORING LOG | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------------------|-------------|----------------|--------------------|--|---|-------------------------------------|-----|--|--|--|--|--------|---------|-------|-----|-------------|------------|----|--------|-------------|----------|----------|--------------|--------|--------|
| PROJECT: Providence Gas Company PROJECT NO.: A2000 048 LOCATION: 642 Allens Avenue, Providence, R.I. DRILLING CO.: Guild Drilling Company DRILLED BY: J.R. INSPECTED BY: Daniel Lanier & Brian Koch | | | | | BORING NO. RCA-1 (BD-103) PAGE 1 OF 1 DATE STARTED: 6/8/94 DATE FINISHED: SURFACE ELEVATION: | | | | | | | | | | | | | | | | | | | | | |
| GROUNDWATER OBSERVATIONS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%;"> <thead> <tr> <th>DEPTH</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">N/A</td> </tr> </tbody> </table> | | | | | DEPTH | STABILIZATION TIME | | N/A | <table border="1" style="width: 100%;"> <thead> <tr> <th></th> <th>CASING</th> <th>SAMPLER</th> </tr> </thead> <tbody> <tr> <td>TYPE:</td> <td>HSA</td> <td>Split Spoon</td> </tr> <tr> <td>SIZE I.D.:</td> <td>6"</td> <td>1-3/8"</td> </tr> <tr> <td>HAMMER WT.:</td> <td>300 lbs.</td> <td>140 lbs.</td> </tr> <tr> <td>HAMMER FALL:</td> <td>30 in.</td> <td>30 in.</td> </tr> </tbody> </table> | | | | CASING | SAMPLER | TYPE: | HSA | Split Spoon | SIZE I.D.: | 6" | 1-3/8" | HAMMER WT.: | 300 lbs. | 140 lbs. | HAMMER FALL: | 30 in. | 30 in. |
| DEPTH | STABILIZATION TIME | | | | | | | | | | | | | | | | | | | | | | | | | |
| | N/A | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CASING | SAMPLER | | | | | | | | | | | | | | | | | | | | | | | | |
| TYPE: | HSA | Split Spoon | | | | | | | | | | | | | | | | | | | | | | | | |
| SIZE I.D.: | 6" | 1-3/8" | | | | | | | | | | | | | | | | | | | | | | | | |
| HAMMER WT.: | 300 lbs. | 140 lbs. | | | | | | | | | | | | | | | | | | | | | | | | |
| HAMMER FALL: | 30 in. | 30 in. | | | | | | | | | | | | | | | | | | | | | | | | |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) | FIELD TEST DATA PID - 10.2 eV (ppm) | | | | | | | | | | | | | | | | | | | |
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | | | | | | | | | | | | | | | | | | | |
| 5' | 4.5 -6.0 | SS-1 | 20% | NA | | Grass | | | | | | | | | | | | | | | | | | | | |
| | 6-7 | S-1 | | (From Casing) | | dry, black, fine SANDY FILL, cohesive asphaltic odor | 101 | | | | | | | | | | | | | | | | | | | |
| 10' | 7-9 | S-2 | | (From Casing) | | moist, black, medium SANDY FILL, with brick, asphaltic odor | 577 | | | | | | | | | | | | | | | | | | | |
| | 9-11 | SS-2 | 100% | NA | | saturated, black, coarse to medium SANDY FILL, asphaltic odor | 64 | | | | | | | | | | | | | | | | | | | |
| | 11 -14 | S-3 | | (From Casing) | | SAME, with sheen | 114 | | | | | | | | | | | | | | | | | | | |
| 15' | 14 -16 | SS-3 | 100% | 3-4 4-3 | | SAME, cohesives, tarry texture | | | | | | | | | | | | | | | | | | | | |
| | | | | | | saturated, black, MEDIUM SAND trace coarse sand | 61 | | | | | | | | | | | | | | | | | | | |
| 20' | | | | | | Bottom of exploration to 17.5' Concrete seal | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 17.5' to 16.5' Bentonite seal | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 16.5' to 6.5' Screen | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 6.5' to 0.5' Riser | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 16.5' to 6.5' Filter pack | | | | | | | | | | | | | | | | | | | | |
| 25' | | | | | | 5.5' to 4.5' Bentonite seal | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 4.5' to 1.5' Grout | | | | | | | | | | | | | | | | | | | | |
| 30' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENERAL REMARKS: 10' 0.010"-slot wire-wrap stainless steel screen (2" diameter) 6' 2" stainless steel riser 5-3/8" sump at bottom, threaded plug D&W / core Boring / Casing Size 6" roadbox at grade | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2000DRL.LOG | | | | | | | | | | | | | | | | | | | | | | | | | | |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

| | |
|---|---|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E84 |
| ESS Job No: P151-002 | Date: 1/19/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmen. Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 5.0' |
| | Logged By: Nicole Murry |

| Depth intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1400 | 0.0 | (0-6") asphalt with M/large concrete bits. (6-12") M brown silty sand with SO M/large rounded stone. (12-24") F/M black cinder ash with SO orange cinders; F coal bits throughout. |
| B | 2-4 | 36/48 | 1410 | 21.0 | (36-40") F/M black cinder ash with SO orange cinders; F coal bits throughout. (40-48") F/M orange sand; SO M stone throughout. (48-72") M/C black cinder ash with SO coal throughout; F cinder ash at 60-72"; wet at 60". Sheen observed. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LJ) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E85

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6'

Depth to Water: 4.5'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1345 | 0.0 | (0-7") pulverized stone/concrete. (7-15") F/M black cinder ash; dry; no odor. (15-24") F/M brown/dark brown sand with SO cinder ash and TR shiny black cinders; dry; no odor. |
| B | 2-4 | 46/48 | 1405 | 15.0 | (26-50") F/M brown/dark brown sand and black cinder ash with shiny and dull black cinders with TR gravel; dry; odor present. (50-59") F/M black cinder ash and small black cinders; wet; heavy odor. (59-72") F/M black cinders and cinder ash with SO silt; saturated with water; heavy, heavy odor. |
| C | 4-6 | | | 26.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|--|-----------------|-----------------|
| | | F = FINE | (0-3.0') PVC Solid Riser (3.0-8.0') PVC Screen One inch sump at 8.0' | A = 0-24 in. | G = 144-168 in. |
| TRACE (TR) | 0-10% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| LITTLE (LJ) | 10-20% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| SOME (SO) | 20-35% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| AND | 35-50% | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|---|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E86 |
| ESS Job No: P151-002 | Date: 1/17/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environment Instruments, Inc., Model 580B OVI |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 4.5' |
| | Logged By: Nicole Murry |

| Depth Intervals | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-----------------|---------------------|----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1325 | 0.0 | (0-2") asphalt and concrete bits. (2-12") M brown sand with M/large gravel and SO black cinder ash throughout. (12-24") F/M black cinder ash with M cinder ash/cinders/coal bits 20-24". |
| B | 2-4 | 36/48 | 1340 | 36.0 | (36-42") very fine loose black cinder ash with SO M/C white porous cinders. (42-48") C orange and black cinder, (48-56") very fine black cinder and bits of coal; wet at 52". (56-72") very C black cinder ash/black cinders/black sand; petroleum saturated; heavy odor. Sheen present. |
| C | 4-6 | | | | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------------------|------------------------|-------------------|--|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LJ) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



72 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F43

Date: 1/12/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 8.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1250 | 0.0 | (0-4") M brown sand with roots, grass, and topsoil. (4-8") F gray silty sand. (8-12") F black cinder ash with M/large bits of coal. (12-24") F black cinder ash with small bits of coal. |
| B | 2-4 | 36/48 | | | (36-48") F black cinder ash with small bits of coal. (48-60") M/C cinder ash with bits of stone (gravel), brick, and orange porous cinders at 48-50". (60-62") brick. (62-64") F/M light orange ash. (64-66") F/M light yellow ash. (66-72") M/C light yellow and tan ash mixed with F/M brown sand; moist at 70". |
| C | 4-6 | | 1300 | 0.0 | |
| D | 6-8 | 24/48 | | 0.0 | |
| E | 8-10 | | | | (72-96") no recovery, (96-100") large porous cinders; saturated. (100-116") F/M black cinder ash; saturated. (116-120") large gravel and stone with F/M brown sand. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F44

Date: 1/12/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 8.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1324 | 0.0 | (0-10") very F loose light tan sand with roots. (10-24") very F black cinder ash mixed with M brown sand and SO coal bits and SO gravel; large gravel at 22-24". |
| B | 2-4 | 24/48 | | 0.0 | (48-52") large bits of coal mixed with F brown sand. (52-56") large gravel with M light brown sand and coal bits. (56-66") C black cinder ash and C large bits of gray porous cinders. (66-68") M light red cinder; solid. (68-72") M brown sand with SO M rounded gravel; moist. |
| C | 4-6 | | 1340 | | |
| D | 6-8 | 48/48 | | 108 | (72-84") C black cinders with M/large rounded gravel and M brown sand. (84-96") F light brown silty sand; saturated; petroleum odor. (96-110") F black stained silty sand with C cinder ash and coal; heavy petroleum odor. (110-120") F light brown silty sand; saturated; petroleum odor. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LJ) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F45

Date: 1/13/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 6.5'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 22/24 | 1210 | 0.0 | (2-12") F/M brown sand with TR gravel; dry; no odor. (12-16") F/M brown sand with SO black sand; dry; no odor. (16-24") F/M brown sand with TR gravel; dry; no odor. |
| B | 2-4 | 42/48 | | 0.0 | (30-61") M/C brown sand with SO gravel; dry; no odor. (61-72") F/M black stained sand; wet at 78"; saturated with heavy petroleum odor. |
| C | 4-6 | | 1230 | 144 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LJ) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: F46 |
| ESS Job No: P151-002 | Date: 1/12/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 10.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 4.5' |
| | Logged By: Nicole Murry |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1445 | 0.0 | (0-6") M brown sand with roots. (6-12") F/M brown silty sand; dense; with small/M rounded gravel. (12-24") F/C black cinder ash mixed with SO brown sand; C coal bits at 18-20"; coal throughout 20-24". |
| B | 2-4 | 42/48 | | 0.0 | (28-40") M brown and black sand with small gravel bits. (40-48") F dense brown/black cinder ash with C cinder ash and porous cinders at 42-44"; SO brown sand throughout. (48-52") M light orange cinder ash and porous cinders with M orange sand and wood fibers. (52-66") F black cinder ash with M/C porous cinders and M/large gravel bits; saturated at 52". (66-72") C black cinder ash. |
| C | 4-6 | | 1510 | | |
| D | 6-8 | | | 0.0 | (72-120") saturated black M/large cinder ash mixed with F/M black sand; porous cinders throughout; petroleum odor. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LJ) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F47

Date: 1/13/00

Within 100' of Water: No

Instrument: Thermo Environment
Instruments, Inc., Model 580B O₂

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1315 | 0.0 | (0-4") asphalt and gravel. (4-19") F/M brown sand and large gravel; dry; no odor. (19-24") F black s dry; sweet odor. |
| B | 2-4 | 45/48 | | 21.2 | (27-31") F/M brown sand with TR gravel; dry; no odor. (31-57") F/M black stained sand and gravel; c light odor. (57-72") F/M black stained sand; wet; heavy odor; black shiny coal pieces with dull cinder interval. |
| C | 4-6 | | 1330 | 50.1 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|---|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: F48 |
| ESS Job No: P151-002 | Date: 1/13/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environment Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 5.0' |
| | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1350 | 3.1 | (0-7") F/M brown sand with LI gravel; dry; no odor. (7-24") F/M black stained sand with SO black cinders; dry; light odor. |
| B | 2-4 | 45/48 | | 4.0 | (27-39") F/M dark brown sand with LI cinder ash; dry; no odor. (39-49") F/M orange stained sand with TR cinder ash; dry; no odor. (49-72") F/M black stained sand with LI silt at 60"; shiny/dull black cinders throughout entire 4' interval; wet at 60"; heavy odor. |
| C | 4-6 | | 1410 | 8.3 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|---|------------------------|-------------------|--|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F56

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environment
Instruments, Inc., Model 580B OVI

Boring Depth: 6.0'

Depth to Water: 5.5'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1435 | 0.0 | (0-2") asphalt and concrete bits. (2-14") F loose light tan sand with SO rounded stone. (14-16") dense cinder ash with coal. (16-18") C red/orange porous cinders. (18-24") loose black cinder ash; SO orange clay at 23". |
| B | 2-4 | 36/48 | | 0.0 | (36-39") F loose gray sand. (37-40") C orange sand; loose. (40-44") large bits of coal with M brick red and orange sand. (44-60") brick red sand with large coal bits. (60-72") C black cinder ash with porous cinders and large bits of coal; wet at 68"; saturation at 66". Sheen observed. |
| C | 4-6 | | 1455 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F57

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1430 | 0.0 | (0-12") F/M brown sand and concrete with SO gravel; dry; no odor. (12-17") F/M black cinder ash/cinders with SO gravel; dry; no odor. (17-24") F brown sand with TR gravel; dry; no odor. |
| B | 2-4 | 41/48 | 1445 | 0.0 | (31-59") F/M brown sand with SO gravel; dry; no odor. (59-72") F/M brown sand with LI gravel and LI silt; saturated with water, light odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

Test Pit Excavation Log



Environmental Science Services, Inc.
 272 West Exchange Street, Suite 101
 Providence, Rhode Island 02903 (401) 421-0398
 Environmental Scientists, Engineers, and Planners

| | | | |
|-----------------|---|-------------------|-----------------------------------|
| Client | Providence Gas Company | Test Pit No. | E86 |
| Site Name | Allens Avenue Remediation Project | Date | 9/25/00 |
| Site Address | 642 Allens Avenue, Providence, Rhode Island | Observed By | D. Issa, S. Courtemanche, A. Frye |
| Job Number | P151-002 | Checked By | Gary Kaufman |
| Contractor | Tantara Corporation | Test Pit Depth | 4.5 feet |
| Excavator Reach | 12 feet | Groundwater Depth | 4.5 feet |

Test Pit Description

0-2" Asphalt parking lot cover.

2"-54" Asphaltic-based material, coal-tar like material, petroleum-impacted material, all of varying degrees of compaction. Sweet odor along with strong diesel odor. Highly compacted layer of apparent "cold patch" asphalt, free petroleum present (21-24"). PID = 29 ppm headspace. Strong petroleum odor. Loosely compacted apparent "cold patch" asphalt (24-54"). Groundwater entering excavation at approximately 4.5 feet. Significant sheening on groundwater and strong diesel-like odor, with additional sweet odor. Gravel and cobbles throughout.


Remarks:

PID Over Excavated Material = 60 ppm Sample 1 (Soil at Water Table)
 PID Over Excavation = 8 ppm (peak not sustained) Sample 2 (Loosely Compacted)
 Draeger Xylene = ND Sample 3 (E86 Dense)
 Sample 4 (Moderately Compacted)

Location/Sketch:

Adjacent to Boring E86 (see Figure 2 of SIR) at toe of PGC soil processing slope.

Test Pit Excavation Log

| | | | | |
|---|-----------------|---|-------------------|-----------------------------------|
|  Environmental Science Services, Inc. 272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Environmental Scientists, Engineers, and Planners | Client | Providence Gas Company | Test Pit No. | F56 |
| | Site Name | Allens Avenue Remediation Project | Date | 9/25/00 |
| | Site Address | 642 Allens Avenue, Providence, Rhode Island | Observed By | D. Issa, S. Courtemanche, A. Frye |
| | Job Number | P151-002 | Checked By | Gary Kaufman |
| | Contractor | Tanlara Corporation | Test Pit Depth | 6 Feet |
| | Excavator Reach | 12 feet | Groundwater Depth | 6 Feet |

Test Pit Description

0-2" Asphalt parking lot.
2-14" Light tan fine sand with some gravel.
14-16" Fine black sand and coal ash. Dry no odors. No measurable PID.
16-24" Slag and red brick with traces of fine sand and silt. Dry.
24-30" Light brown fine to medium sand and gravel.
30-72" Slag and coal with red brick fragments. Wet at 72".

Remarks:
Groundwater entering excavation at approximately 6 feet. No visible sheen.
No PID readings above background. No discernable odors.

Location/Sketch:
Adjacent to Boring F56. See Figure 2 in SIR.

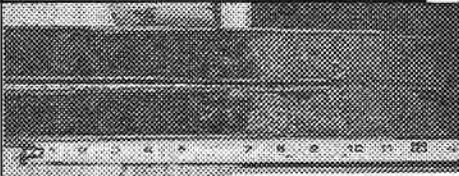
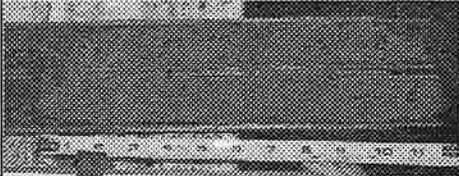

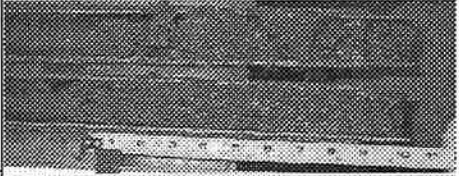

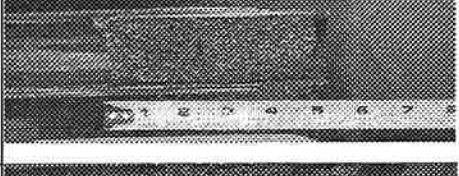
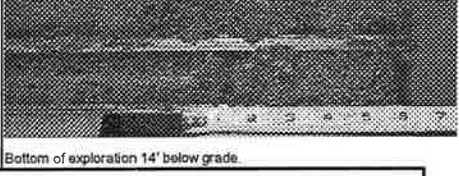
Soil Boring Report

PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. **VHB-1**
 Well ID: **VHB-1**
 Job Number: **71274** Sheet 1 of 1

Drilling Company: **Subsurface Drilling and Remediation** Boring Location: **By office / property line north**
 Driller: **Jim Goldthwaite / Josh Downing** Elevation: **NA** Datum: **NA**
 Inspector: **Keith Sullivan / Adam Rosenblatt** Start Date: **1/15/2002** End Date: **1/15/2002**

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2' split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|-------------------|---|--|
| 0 - 2 | 1.2 | S1 | 24 / 13 | 8 - 12 13 - 10 | 3" Asphalt over 7" coal slag, over light brown, medium dense fine SAND trace silt, trace gravel moist, no sheen or odor. |  |
| 2 - 4 | ND | S2 | 24 / 12 | 8 - 7 6 - 6 | Light brown, loose, fine SAND, moist, no sheen or odors. |  |
| 4 - 6 | 111.6 | S3 | 24 / 11 | 1 - 2 1 - 2 | Grayish brown, very loose, fine to medium SAND, trace silt, strong chemical odor, separate phase product, strong chemical odor. |  |
| 6 - 8 | 85.4 | S4 | 24 / 10 | 2 - 2 2 - 1 | Grayish brown, very loose, fine to medium SAND, trace silt, strong chemical odor, separate phase product, strong chemical odor. |  |
| 8 - 10 | 105.6 | S5 | 24 / 11 | 1 - 3 5 - 6 | 8" gray, loose, fine SAND, trace silt, over 3" black coarse SAND, oil saturated, strong chemical odor. |  |
| 10 - 12 | 64.2 | S6 | 24 / 10 | 1 - 2 1 - 2 | Black, very loose, medium SAND, strong chemical odor, wet. |  |
| 12 - 14 | 31.2 | S7 | 24 / 6 | 1 - 2 2 - 4 | Black, very loose, medium SAND, strong chemical odor, wet. |  |

Bottom of exploration 14' below grade

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | PROPORTIONS | Notes |
|---------------------------------|---------------------------------|-----------------|---|
| 0 - 4 V. Loose | <2 V. Soft | Trace 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). |
| 4 - 10 Loose | 2 - 4 Soft | Little 10 - 20% | |
| 10 - 30 M. Dense | 4 - 8 M. Stiff | Some 20 - 35% | |
| 30 - 50 Dense | 8 - 15 Stiff | And 35 - 50% | |
| >50 V. Dense | 15 - 30 V. Stiff | | |
| | >30 Hard | | |

Soil Boring Report

PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. VHB-15

Well ID: NA

Job Number: 71274 Sheet 1 of 1

Drilling Company: Subsurface Drilling and Remediation

Boring Location: Out front, north of VHB 14

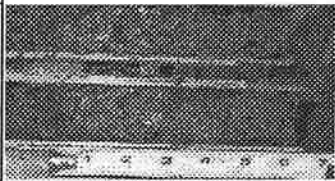
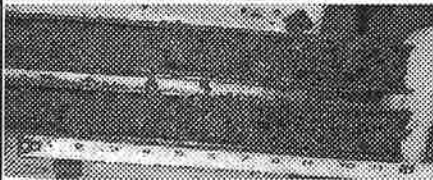
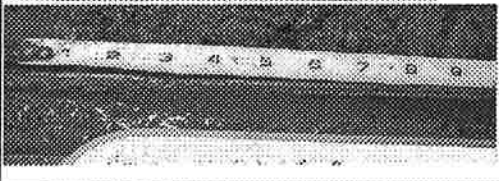
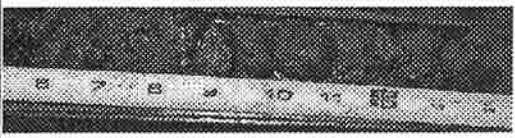
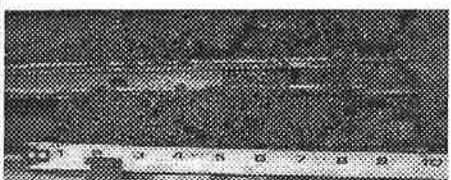
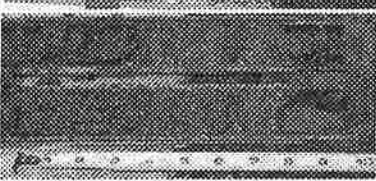
Driller: Jim Goldthwaite / Josh Downing

Elevation: NA Datum: NA

Inspector: Keith Sullivan / Adam Rosenblatt

Start Date: 1/17/2002 End Date: 1/17/2002

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2' split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|--|-------------|---|---------|---|--|--|
| 0 - 5 | ND | S1 | NA | NA | Auger cuttings - Loose, dark brown, medium SAND and silt, trace coal slag, moist. | |
| 5 - 7 | ND | S7 | 24 / 6 | 2 - 1 2 - 1 | Rusty brown to black, very loose, COAL fragments, moist, no sheen or odor. |  |
| 7 - 9 | ND | S3 | 24 / 12 | 1 - 2 3 - 3 | Black, loose, medium SAND, some silt, little gravel, trace wood, wet, gray staining, moderate chemical odor. |  |
| 9 - 11 | 3.0 | S4 | 24 / 8 | 2 - 3 3 - 5 | Black, loose, GRAVEL, some silt and medium sand, wet, faint sheen, faint unrecognizable odor. |  |
| | | | | | |  |
| 10 - 12 | 3.0 | S5 | 24 / 10 | 7 - 5 3 - 3 | Black, loose, GRAVEL, some silt, some medium sand, wet, faint chemical odor, coal tar sheen. |  |
| 12 - 14 | 5.5 | S6 | 24 / 10 | 2 - 2 4 - 9 | 2" black, loose, GRAVEL, some silt, over 8" black, loose, medium sand, wet, faint chemical odor, coal tar sheen. |  |
| | | | | | Bottom of exploration 14' below grade. | |
| GRANULAR SOILS BLOWS/FT DENSITY 0 - 4 V. Loose 4 - 10 Loose 10 - 30 M. Dense 30 - 50 Dense >50 V. Dense | | COHESIVE SOILS BLOWS/FT DENSITY <2 V. Soft 2 - 4 Soft 4 - 8 M. Stiff 8 - 15 Stiff 15 - 30 V. Stiff >30 Hard | | PROPORTIONS Trace 0 - 10% Little 10 - 20% Some 20 - 35% And 35 - 50% | Notes 1) Soil stratification lines represent a graphical depiction of changes in soil type and grain size. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). | |

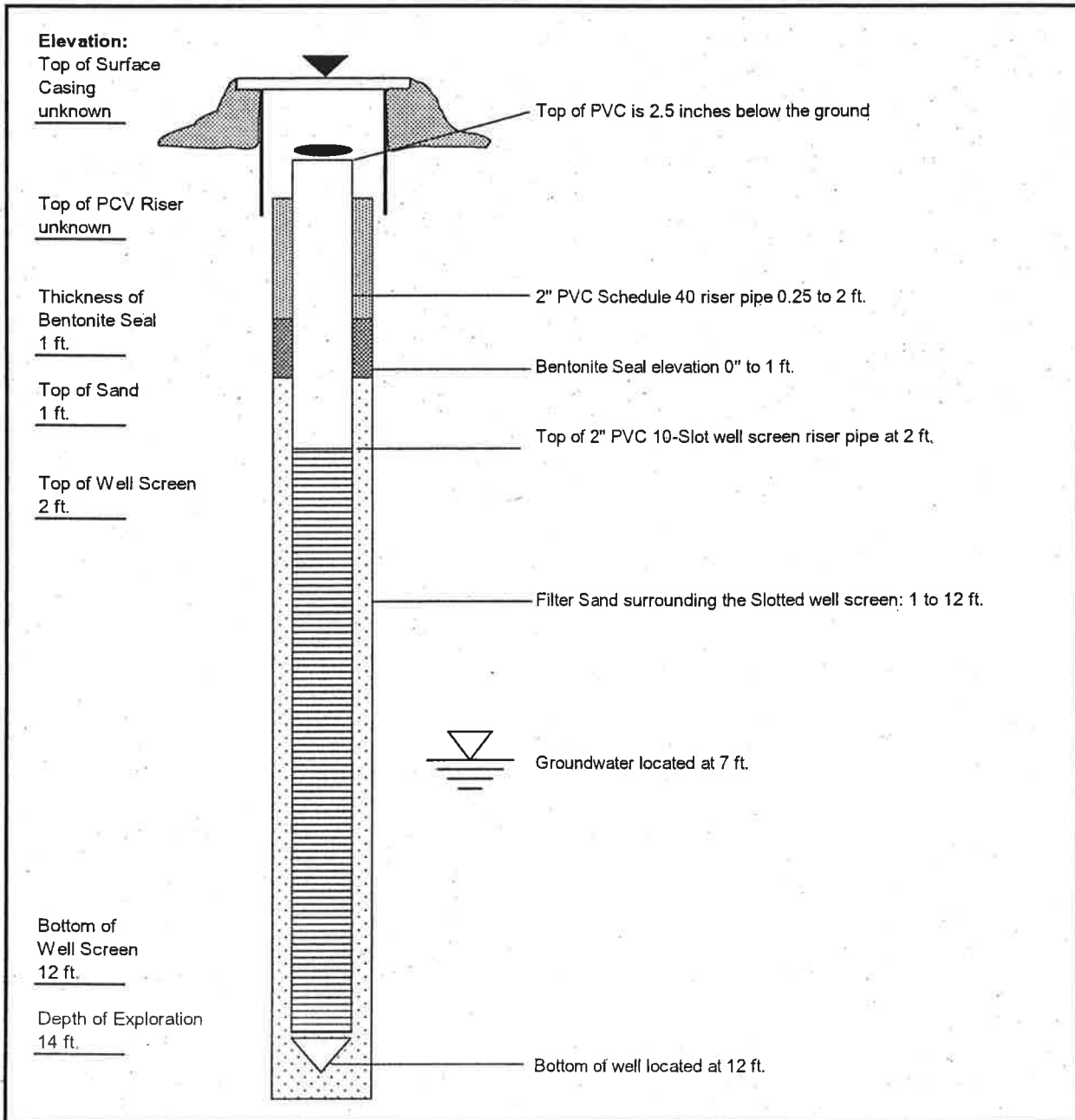
16

VHB Monitoring Well Diagram

Project Name: New England Gas
Location: 642 Allens Ave
Providence, RI

Project No. 71274
Contractor: Subsurface Drilling
Scientist: K. Sullivan / A. Rosenblatt

Date: 15-Jan-02
Well No. VHB-1
GW Depth: Approx. 7 Feet



TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-304D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MB/SN/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.78
Final Boring Depth (ft.): 30
Date Start - Finish: 5/21/2014 - 5/24/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 6.66 | 5 Days |
| 6/3/14 | NM | 6.50 | 10 Days |
| 6/13/14 | NM | 6.44 | 20 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, dry 6"-24" Black (10YR, 2/1) fine SAND, little Ash, trace Silt, trace Gravel, trace Slag, dry | 1 2 | ND ND | | | | | ← Road Box |
| | | | | | | | | | | | | | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine SAND, little Ash, trace Silt, trace Gravel, trace Slag, dry | 0.7 | | | | | | ← Bentonite Seal |
| 3 | | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine SAND, little Ash, trace (+) Slag, trace (+) Brick, trace Silt, trace Gravel, moist | 1 | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 8 | 1 2 3 1 | S-4 : Very loose, gray (GLEY 1, 4N) fine to coarse SAND, little Silt, trace (+) Gravel, trace Brick, slight Coal tar-like odor, wet | 13 | | Sigt | | | FILL | ← Filter Sand |
| 7 | | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 12 | 5 5 6 7 | S-5 : Medium dense, tan (2.5YR, 4/2) fine to coarse SAND, little Gravel, trace Silt, trace Brick, strong Coal tar-like odor, wet | 3 | 48 | | | | | |
| 9 | | | | | | | 4 | | Strg | | | | |
| 10 | S-6 | 10-12 | 24 | 18 | 5 6 7 7 | S-6 : Medium dense, gray (GLEY 1, 5/10YR) fine to coarse SAND, little (-) Gravel, trace Silt, slight Coal tar-like odor, wet | 6 | | | Sigt | | | |
| 11 | | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 5 | 8 5 7 8 | S-7 : Medium dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (-) Gravel, trace Silt, moderate oil-like and Coal tar-like odor, slight sheen, wet | 66 | | | Mod | | | |
| 13 | | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 1 | 7 4 2 2 | S-8 : Loose, gray (GLEY 1, 4/N) fine to coarse SAND, strong Coal tar-like odor, Coal tar saturated, wet | 14 | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS
 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 6.5 feet bgs.
 4 - Coal tar saturated lense observed between 9 and 10 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-304D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-304D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Depth(ft.) Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---|--|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 12 | 3 3 3 3 | S-9 : 0-6" Gray (GLEY 1, 5/10Y) fine to coarse SAND, little Silt, trace Silt, wet 6-12" Gray (GLEY 1, 5/10Y) fine SAND, little (+) Silt, wet | | 1.5 | | | | <p>PVC Riser</p> <p>Bentonite Seal</p> <p>Filter Sand</p> <p>Well Screen</p> |
| 17 | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 0 | 4 2 1 1 | S-10 : Very loose, no recovery | | NM | | | | |
| 19 | | | | | | | 5 | | | | | |
| 20 | S-11 | 20-22 | 24 | 24 | WOH | S-11 : Very loose, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, trace Shell fragments, wet | | 0.5 | | | 20 -6.2 | |
| 21 | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 24 | 1 WOH 1 1 | S-12 : Very loose, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, trace Shell fragments, wet | | 0.7 | | | | |
| 23 | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 22 | 1 1 1 1 | S-13 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | |
| 25 | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 18 | WOH | S-14 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | |
| 27 | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | WOH | S-15 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 -16.2 | |
| 31 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |

REMARKS

5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-3 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-304D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-305S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.89
Final Boring Depth (ft.): 20
Date Start - Finish: 5/21/2014 - 5/22/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 5/29/14 | NM | 6.72 | 7 Days |
| 6/3/14 | NM | 6.77 | 12 Days |
| 6/13/14 | NM | 6.65 | 22 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|---|---------------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1: 0-6" Dark brown (10YR, 3/3) fine SAND and SILT, trace Gravel, trace Roots, dry 6"-24" Black (10YR, 2/1) fine SAND, some Silt, some Ash, trace Gravel, dry | 1 2 | 0.9 4.6 | | | | ← Road Box |
| | | | | | | | | | | | | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2: Black (10YR, 2/1) fine SAND, some Silt, some Ash, trace Gravel, dry | | 0.6 | | | | ← PVC Riser ← Bentonite Seal |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3: Black (10YR, 2/1) fine SAND, some Silt, some Ash, little Brick, trace Gravel, moist | | 0.6 | | | | ← Filter Sand |
| 5 | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 8 | 20 9 9 7 | S-4: Medium dense, gray (GLEY 1, 3/N) fine to coarse SAND, trace Gravel, trace (-) Silt, trace Brick, wet | | 4 | | | | |
| 7 | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 8 | 9 11 12 9 | S-5: Medium dense, gray (GLEY 1, 3/N) fine to coarse (+) SAND, little Gravel, trace Silt, moderate oil-like odor, slight sheen, wet | 3 | 186 | | Mod | | |
| 9 | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 8 | 13 12 4 4 | S-6: 0-4" Gray (GLEY 1, 3/N) fine to coarse (+) SAND, little Gravel, trace Silt, moderate oil-like odor, slight sheen, wet 4"-8" Gray (GLEY 1, 3/N) fine SAND little Silt, moderate oil-like odor, slight sheen, wet | | 142 | | Mod | | ← Well Screen |
| 11 | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 14 | 12 10 26 26 | S-7: Dense, gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace Silt, moderate oil-like odor, slight sheen, wet | | 85 | | Mod | | |
| 13 | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 9 | 26 19 26 16 | S-8: Dense, gray (GLEY 1, 2.5/N) fine to coarse SAND, little (-) Gravel, trace Silt, slight oil-like odor, wet | | 2 | | | | |
| 15 | | | | | | | | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-305S**

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:13 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-305S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 8 | 5 5 | S-9 : 0-2" Gray (GLEY 1, 2.5/N) fine to coarse SAND, little (-) Gravel, trace Silt, slight oil-like odor, wet | 4 | 0.5 | | Sigt | FILL | -4.1 | ← Filter Sand |
| 17 | | | | | 5 5 | | | | | | 2"-8" Gray (GLEY 1, 4/N) fine SAND, little (+) Silt, trace Shell, wet | | |
| 18 | S-10 | 18-20 | 24 | 20 | 2 2 | S-10 : Loose, gray (GLEY 1, 4/N) fine SAND, little (+) Silt, trace Shell, wet | 0.4 | | | | SAND AND SILT/POSSIBLE ORGANIC SILT | -8.1 | |
| 19 | | | | | 2 2 | | | | | | | | |
| 20 | | | | | | End of exploration at 20 feet. | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
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| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS
 4 - 5 feet of casing was lost in the borehole from 9 to 14 feet bgs. The boring was aborted and resumed two feet to the north of the original location. The location was excavated via vacuum prior to resuming.
 5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-20 feet bgs; Bentonite Seals installed from 2-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-305S

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-306S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.90
Final Boring Depth (ft.): 20
Date Start - Finish: 5/21/2014 - 5/22/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/19/14 | NM | 6.50 | 7 Days |
| 6/3/14 | NM | 6.56 | 12 Days |
| 6/13/14 | NM | 6.47 | 22 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Groundwater Depth (ft.) | | Equipment Installed | |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------------------|--------------------------------|---------------------|---------------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Stratum Description Elev.(ft.) | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, dry 6"-24" Black (10YR, 2/1) fine SAND, some Ash, little Silt, trace Gravel, dry | 1 2 | ND 10 | | | | | ← Road Box | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine SAND, some Ash, little Silt, trace Gravel, trace Brick, trace glass, dry | | | | | | | | ← PVC Riser ← Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine SAND, some Ash, little Silt, trace Gravel, trace Brick, trace glass, dry | | | | | | | | ← Filter Sand |
| 4 | S-4 | 6-8 | 24 | 12 | 41 11 23 24 | S-4 : Dense, gray (GLEY 1, 2.5/N) fine to coarse SAND, trace Gravel, trace Silt, slight oil-like odor, slight sheen, wet, 4" lense of coal tar saturation present at 7.5 feet bgs with Coal tar-like odor | | 191 | | Mod | | | | |
| 5 | S-5 | 8-10 | 24 | 16 | 20 6 5 6 | S-5 : Medium dense, gray (GLEY 1, 2.5/N) fine to coarse SAND, trace Gravel, trace Silt, slight sheen, slight oil-like odor, wet | 3 | 637 | | Sigt | | | | |
| 6 | S-6 | 10-12 | 24 | 12 | 4 4 5 4 | S-6 : Loose, gray (GLEY 1, 2.5/N) fine (+) to coarse SAND, little Silt, slight sheen, slight oil-like odor, wet | | 132 | | Sigt | | | | ← Well Screen |
| 7 | S-7 | 12-14 | 24 | 15 | 6 6 10 8 | S-7 : Medium dense, gray (GLEY 1, 2.5/N) fine (+) to coarse SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet | | 47 | | Sigt | | | | |
| 8 | S-8 | 14-16 | 24 | 9 | 13 6 2 1 | S-8 : 0-4" Gray (GLEY 1, 2.5/N) fine (+) to coarse SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet 4"-9" Gray (GLEY 1, 4/N) fine SAND, some Silt, | | 11 | | Sigt | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-306S

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-306S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|-------------------------------------|-------------|----------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 6 | 5 16 9 3 | S-9 : 0-3" Gray (GLEY 1, 4/N) fine SAND, some Silt, wet 3"-6" Gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace Silt, wet | | 2 | | | FILL | 16 -4.1 | <p>← Filter Sand</p> |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 22 | 2 1 2 1 | S-10 : Very loose, gray (GLEY 1, 4/N) fine SAND, some (+) Silt, wet | | 0.4 | | | SAND AND SILT/POSSIBLE ORGANIC SILT | | |
| 19 | | | | | | | 4 | | | | | | |
| 20 | | | | | | End of exploration at 20 feet. | | | | | | 20 -8.1 | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
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| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 15 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-5 feet bgs; Filter Sand placed in annulus from 4-20 feet bgs; Bentonite Seals installed from 2-4 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-306S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-307S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.7
Final Boring Depth (ft.): 20
Date Start - Finish: 5/19/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 4.65 | 10 Days |
| 6/3/14 | NM | 4.84 | 15 Days |
| 6/6/14 | NM | 4.82 | 18 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-2" Black (10YR, 2/1) ASPHALT 2"-8" Brown (10YR, 5/6) fine to medium SAND, trace Gravel, trace Silt, dry 8"-24" Black (10YR, 2/1) fine to medium SAND, little Ash, trace Coal, trace Slag, dry | 1 | NM | | | Road Box | |
| | | | | | | | 2 | 3 | ND | | | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Pale brown (10YR, 6/3) fine SAND, some Silt, trace Gravel, moist | | | | | Bentonite Seal PVC Riser Filter Sand | |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Dark gray (10YR, 4/2) fine SAND and SILT, trace Gravel, moderate oil-like odor, wet | | 506 | | Mod | | |
| 5 | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 12 | 1 1 | S-4 : Dark gray (10YR, 4/2) fine to coarse SAND, some Silt, little Gravel, slight sheen, oil-like saturation, moderate to strong oil-like odor, wet | | 334 | | Strg | FILL | |
| 7 | | | | | 1 2 | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 8 | 1 1 | S-5 : Dark gray (10YR, 4/2) fine to coarse SAND, little Silt, little Gravel, sheen oil-like coating and bands of saturation, strong oil-like odor, wet | 3 | 487 | | Strg | | Well Screen |
| 9 | | | | | 1 1 | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 6 | 2 3 | S-6 : Dark gray (10YR, 4/2) fine to coarse SAND, little Silt, little Gravel, sheen oil-like coating and bands of saturation, strong oil-like odor, wet | | 717 | | Strg | | |
| 11 | | | | | 1 1 | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 8 | 5 3 | S-7 : Dark gray (10YR, 4/2) fine to coarse SAND, little (+) Gravel, trace (+) Silt, sheen, moderate oil-like odor, oil-like coating and bands of saturation, wet | | 438 | | Strg | | |
| 13 | | | | | 3 1 | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 8 | 5 4 | S-8 : Dark gray (10YR, 4/2) fine to coarse SAND, little (+) Gravel, trace (+) Silt, sheen, moderate oil-like odor, oil-like cocating and bands saturation, wet | | 408 | | | | |
| 15 | | | | | 6 5 | | | | | | | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-307S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:16 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-307S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Depth(ft.) Description Elev.(ft.) | Equipment Installed | |
|------------|--------|-------------|-----------|-----------|-----------------|--|-------------|-----------------|--------|------|---|---------------------|---------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 14 | 1 1 | S-9 : 0-6" Gray (10YR, 4/1) fine SAND and SILT, little Gravel, wet, slight oil-like odor 6"-10: Black (10YR, 2/1) fine to medium SAND, some Silt, trace Gravel, trace wood, trace Organics, wet 10"-14" Gray (10YR, 5/1) fine SAND, some Silt, trace Shells, trace Organics, wet | 156 20 4 | | | Strg | 16 | FILL -5.3 | ← Filter Sand |
| 17 | | | | | 1 1 | | | | | | SAND AND SILT/POSSIBLE ORGANIC SILT | | |
| 18 | S-10 | 18-20 | 24 | 10 | 5 3 | S-10 : Gray (10YR, 5/1) fine SAND, some Silt, trace Shells, trace Organics, wet | ND | | | | | 20 | -9.3 |
| 19 | | | | | 2 2 | | | | | | | | |
| 20 | | | | | | End of exploration at 20 feet. | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
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| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 13 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-3 feet bgs; Filter Sand placed in annulus from 2-20 feet bgs; Bentonite Seals installed from 1-2 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox. Well was installed on 5/19/14 using hollow stem augers. Well installed three feet to the north of the boring location.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-307S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-308S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 19.71
Final Boring Depth (ft.): 22
Date Start - Finish: 5/19/2014 - 6/4/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 2.76 | 10 Days |
| 6/3/14 | NM | 2.98 | 15 Days |
| 6/6/14 | NM | 2.97 | 18 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-----------------------------------|--|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-3" Black (10YR, 2/1) ASPHALT 3"-24" Dark brown (10YR, 2.2) fine to medium SAND, little Gravel, trace Ash, trace Silt, dry | 1 2 | NM | | | | ← Road Box ← Bentonite Seal ← PVC Riser ← Filter Sand |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Brown (10YR, 4/3) fine SAND, little Silt, trace Gravel, moist | | 0.9 | | | | |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | 24 | 0 | 1 2 1 2 | S-3 : Loose soils-no recovery | | NM | | | | |
| 5 | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 7 | 4 2 1 2 | S-4 : Loose, dark gray (10YR, 4/1) fine to coarse SAND, little Gravel, little (+) Silt, wet, sheen, bands of oil saturation, moderate to strong oil-like odor | | 536 | | Strg | | |
| 7 | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 0 | 6 4 3 2 | S-5 : Loose soils-no recovery, sheen on spoon | 3 | NM | | | FILL | ← Well Screen |
| 9 | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 0 | 2 1 2 1 | S-6 : Loose soils-no recovery, sheen on spoon | | NM | | | | |
| 11 | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 12 | 4 2 1 2 | S-7 : Loose, dark gray (10YR, 4/1) fine to medium SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | | 53 | | Sigt | | |
| 13 | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 0 | 3 2 1 2 | S-8 : Loose soils-no recovery, sheen on spoon | | NM | | | | |
| 15 | | | | | | | | | | | | |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-308S

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:18 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-308S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|----------------------------|-------------|----------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 20 | 4 2 1 2 | S-9 : Loose, gray (10YR, 5/2) SAND and SILT, trace Organics, trace Shells, wet | | 27 | | | FILL | 3.7 | <p>← Filter Sand</p> |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 3 | 2 2 5 6 | S-10 : Loose, gray (10YR, 5/2) SAND and SILT, trace Organics, trace Shells, wet | | 13 | | | ORGANIC SILT/SAND AND SILT | | |
| 19 | | | | | | | 4 | | | | | | |
| 20 | S-11 | 20-22 | 24 | 24 | 3 2 3 5 | S-11 : Loose, gray (10YR, 5/2) SILT and SAND, trace Organics, trace Shells, trace wood, trace Fibers, wet | | 7 | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | End of exploration at 22 feet. | | | | | | -2.3 | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
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| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 12 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-2 feet bgs; Filter Sand placed in annulus from 2-22 feet bgs; Bentonite Seals installed from 0.5-1.5 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox. Well was installed on 5/19/14 using hollow stem augers. Well was installed approximately five feet to the south of the boring location.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-308S

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-309D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.51
Final Boring Depth (ft.): 30
Date Start - Finish: 5/19/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 2.73 | 9 Days |
| 6/16/14 | NM | 4.11 | 17 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-3" Black (10YR, 2/1) ASPHALT 3"-24" Dark gray (10YR, 4/1) fine to medium SAND, trace Gravel, trace Silt, trace Ash, dry | 1 2 | NM 0.2 | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/4) fine SAND, some Silt, trace Gravel, dry | | 0.3 | | | | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Yellow brown (10YR, 5/4) fine SAND, some Silt, trace Gravel, dry | | 0.3 | | | | | |
| 4 | S-4 | 6-8 | 24 | 14 | 4 2 1 1 | S-4 : Loose, gray (10YR, 4/2) fine SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | | 263 | Mod | | | | |
| 5 | S-5 | 8-10 | 24 | 15 | 1 4 4 2 | S-5 : Loose, gray (10YR, 4/2) fine SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | 3 | 281 | Mod | | | | |
| 6 | S-6 | 10-12 | 24 | 1 | 4 2 1 1 | S-6 : Loose, black (10YR, 2/1) fine SAND, little Silt, little Gravel, little Coal, wet, oil-like staining, slight oil-like odor | | 90 | Sigt | | | | |
| 7 | S-7 | 12-14 | 24 | 3 | 1 1 1 1 | S-7 : Very loose, black (10YR, 2/1) fine SAND, little Silt, little Gravel, little Coal, wet, oil-like staining | | 10 | | | | | ← Filter Sand |
| 8 | S-8 | 14-16 | 24 | 15 | 4 2 3 1 | S-8 : Loose, gray (10YR, 4/1) fine to Medium SAND, little Silt, little Gravel, wet | | 7.1 | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-309D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:20 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-309D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|--------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 4 | 1 1 1 1 | S-9 : very loose, gray (10YR, 4/2) fine to coarse SAND, little Gravel, trace (+) Silt, wet, slight oil-like odor | | | | | | | | |
| 17 | | | | | | | | | | Slight | | FILL | | ← Filter Sand |
| 18 | S-10 | 18-20 | 24 | 15 | 2 1 1 2 | S-10 : Very soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Roots, trace Shells, wet | | | | | 18 | -7.5 | | ← Bentonite Seal |
| 19 | | | | | | | 4 | | | | | | | ← Filter Sand |
| 20 | S-11 | 20-22 | 24 | 18 | 1 2 1 1 | S-11 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 2 1 1 2 | S-12 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 20 | 1 1 1 1 | S-13 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | ORGANIC SILT | | |
| 25 | | | | | | | | | | | | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 20 | 2 1 1 1 | S-14 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 20 | 1 1 1 1 | S-15 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -19.5 | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-309D

TABLE Q-1 - SUBSURFACE SOIL ANALYTICAL DATA

DRAINAGE REHABILITATION AREA DATA GAP

642 Allens Avenue

Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | RCA-1 6-9 FT 1994 | E84 2-4 FT 1/19/2000 | E85 2-4 FT 1/19/2000 | E86 2-4 FT 1/19/2000 | Test Pit E86 | | | | F43 4-6 FT 1/12/2000 | F44 4-6 FT 1/12/2000 | F45 4-6 FT 1/13/2000 | F46 4-6 FT 1/12/2000 | F47 4-6 FT 1/13/2000 | F48 4-6 FT 1/13/2000 | F56 4-6 FT 1/19/2000 | F57 2-4 FT 1/19/2000 | VHB-1 | | |
|--|--------------------------------|---------------|-----------|-------|-------------------------|----------------------------|----------------------------|----------------------------|--------------|--------------|----------------|----------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|---------------|----------|----|
| | | | | | | | | | 4.5 FT - Wet | 3 FT - Loose | 4 FT - Mod | 4 FT - Dense | | | | | | | | | 6-8 FT | 10-12 FT | |
| | | | | | | | | | 9/25/2000 | | | | | | | | | | | | 1/15/2002 | | |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | 40 | ND | 0.61 | ND | ND | ND | 1.7 | ND | |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | 28 | ND | ND | ND | ND | ND | 0.5 | ND | |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | 2.9 | ND | ND | ND | ND | ND | 0.6 | ND | |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 326 | 113 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| Chloroform | NE | 940 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | 28 | ND | ND | ND | ND | ND | 42.2 | 14.5 | ND | 0.05 | ND | ND | 0.67 | ND | ND | ND | ND | ND | |
| Isopropylbenzene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | 1 | ND | |
| Methyl tert-Butyl Ether | 100 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | 10.5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | 0.4 | ND | |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | 42 | 0.11 | 2 | ND | ND | ND | 6.9 | ND | |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | 0.8 | ND | |
| sec-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | 1.3 | ND | |
| Styrene | 64 | 190 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| tert-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | NA | NA | NA | ND | ND | ND | ND | ND | ND | ND | ND | 0.1 | ND | |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 417 | 158 | ND | ND | 1.3 | ND | 0.45 | ND | ND | ND | ND | ND | |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | 110 | ND | ND | ND | ND | ND | 658 | 263 | 0.061 | 0.085 | 44 | ND | 1.7 | ND | ND | ND | ND | ND | |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | NA | 1,600 | 1,200 | 7,200 | 1,360 | 211 | 224,000 | 112,000 | 550 | 2,800 | 20,000 | 2,800 | 230 | 4,100 | 680 | 240 | 10,454 | NA | |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | NA | 2.3 | 9.2 | 7.6 | NA | NA | NA | NA | ND | 0.11 | 4 | 3.4 | 0.82 | 1.3 | 3.9 | 0.3 | NA | NA | |
| Antimony | NE | 820 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Arsenic | NE | 7 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Beryllium | NE | 1.5 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Cadmium | NE | 1,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Chromium | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Copper | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Iron | NE | NE | NE | mg/kg | NA | 14,200 | 37,600 | 50,300 | NA | NA | NA | NA | 11,500 | 11,500 | 8,810 | 19,900 | 40,800 | 107,000 | 177,000 | 19,000 | NA | NA | |
| Lead | NE | 500 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Mercury | NE | 610 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Nickel | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Silver | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Thallium | NE | 140 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Zinc | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor 1260 | 10 | 10 | 10,000 | mg/kg | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.14 | ND | ND | ND | ND | NA | NA |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | 10000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | 480 | 421 | ND | ND | 2.4 | ND | ND | 2.5 | ND | ND | NA | NA | |
| 2,4-Dinitrotoluene | NE | 8.4 | 10,000 | mg/kg | ND | ND | ND | ND | NA | 1.61 | ND | ND | 3.5 | ND | ND | ND | ND | ND | ND | ND | NA | NA | |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | ND | 1.8 | 14 | 8.9 | NA | 2.01 | 3790 | 3540 | 2.1 | 6.7 | 110 | 5.3 | 2.2 | ND | 3.3 | 0.43 | NA | ND | |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | ND | ND | 0.65 | 0.48 | NA | ND | 716 | 514 | ND | ND | 1.6 | ND | 0.089 | ND | ND | ND | NA | NA | |
| 4-Methylphenol | NE | NE | 10,000 | mg/kg | ND | ND | 1.9 | 1.2 | NA | ND | 1530 | 1180 | ND | ND | 3.9 | ND | 0.5 | ND | ND | ND | NA | NA | |
| 4-Nitroaniline | NE | 8200 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | 18 | ND | ND | ND | ND | ND | NA | NA | |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | 140 | ND | ND | ND | NA | ND | 347 | 323 | ND | 22 | 21 | 7.3 | ND | 3.5 | ND | ND | NA | ND | |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | 220 | 1.4 | 15 | 16 | NA | 1.2 | 1580 | 1280 | 3 | 1.4 | 96 | 17 | 9.9 | 2.2 | ND | ND | NA | ND | |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | 580 | 1.6 | 20 | 18 | NA | 2.15 | 2370 | 2320 | 3.5 | 40 | 170 | 37 | 17 | 3.9 | 1.2 | 0.66 | NA | ND | |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | 650 | 2.8 | 29 | 42 | NA | 1.81 | 1,920 | 2,080 | 5.5 | 54 | 170 | 82 | 66 | 13 | 3.2 | 2.6 | NA | ND | |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | 370 | 2.4 | 22 | 38 | NA | 1.6 | 923 | 675 | 4.5 | 36 | 120 | 70 | 48 | 18 | 2.7 | 1.8 | NA | ND | |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | 460 | 4.4 | 31 | 54 | NA | 1.08 | 894 | 652 | 6.3 | 49 | 170 | 91 | 78 | 23 | 4.1 | 2.9 | NA | ND | |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | 210 | ND | 8.5 | 18 | NA | 1.31 | 407 | 276 | 1.9 | 13 | 47 | 36 | 22 | 7.9 | ND | ND | NA | ND | |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | 370 | 1.2 | 13 | 16 | NA | 1.62 | 740 | 369 | 2.6 | 14 | 63 | 35 | 25 | 9.4 | 1.4 | 1 | NA | ND | |
| Carbazole | NE | NE | 10,000 | mg/kg | ND | ND | 13 | 4.9 | NA | ND | ND | ND | 3.1 | 6.6 | 32 | 11 | 3.4 | 0.51 | ND | 2.5 | NA | NA | |
| Chrysene | NE | 780 | 10,000 | mg/kg | 470 | 3.2 | 26 | 35 | NA | 1.95 | 1,970 | 2,060 | 4.8 | 45 | 130 | 70 | 55 | 14 | 3.6 | ND | NA | ND | |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | ND | ND | 6.8 | NA | NA | ND | 205 | 159 | ND | 5.1 | 21 | ND | 10 | ND | ND | ND | NA | ND | |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | 270 | 0.56 | 15 | 7.6 | NA | 1.67 | ND | 2,300 | 1.9 | 7.7 | 120 | 12 | 3.4 | 1.5 | 0.83 | ND | NA | NA | |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | 1,600 | 7.7 | 76 | 74 | NA | 4.56 | 5,020 | 5,680 | 12 | 110 | 380 | 140 | 150 | 23 | 8.5 | 6.2 | NA | 5.8 | |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | 480 | ND | 27 | 12 | NA | 2.67 | 3,220 | 3,560 | 3.3 | 24 | 240 | 28 | 8 | 3.1 | 0.46 | ND | NA | ND | |
| Hexachloroethane | NE | 410 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | 72.6 | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | 220 | ND | 10 | 21 | NA | 1.03 | 382 | 279 | 2.2 | 15 | 54 | 39 | 26 | ND | ND | ND | NA | ND | |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | 290 | 1.4 | 18 | 36 | NA | 4.87 | 165,000 | 15,200 | 4.6 | 2.3 | 48 | 9.6 | 6.6 | 1.9 | 3.3 | ND | NA | ND | |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | 1,900 | 5.1 | 87 | 52 | NA | 7.88 | 8,860 | 9,150 | 13 | 120 | 490 | 120 | 76 | 8 | 6.2 | 4.3 | NA | 5 | |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | 1,000 | 5 | 47 | 63 | NA | 2.91 | | | | | | | | | | | | | |

TABLE Q-1 - SUBSURFACE SOIL ANALYTICAL DATA

DRAINAGE REHABILITATION AREA DATA GAP

642 Allens Avenue

Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | GZ-304D | GZ-304D | GZ-304D | GZ-305S | GZ-306S | GZ-306S | GZ-306S | GZ-307S | GZ-307S | GZ-308S | GZ-308S | GZ-309D | GZ-309D |
|--|--------------------------------|---------------|-----------|-------|---------------------|----------------------|-----------------------|----------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|--------------------|----------------------|---------------------|
| | | | | | 2-4 FT 5/21/2014 | 8-10 FT 5/28/2014 | 12-14 FT 5/28/2014 | 8-10 FT 5/22/2014 | 2-4 FT 5/21/2014 | 6-8 FT 5/22/2014 | 8-10 FT 5/22/2014 | 4-6 FT 05/19/2014 | 10-12 FT 6/3/2014 | 2-4 FT 05/19/2014 | 6-8 FT 6/4/2014 | 4-6 FT 05/19/2014 | 6-8 FT 5/20/2014 |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | 0.167 | NA | NA | NA | 0.911 | NA | NA | 0.0505 | NA | ND | NA | ND | NA |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | 0.0593 | NA | NA | NA | 0.99 | NA | NA | ND | NA | ND | NA | ND | NA |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | 0.0194 | NA | NA | NA | 0.11 | NA | NA | 0.0399 | NA | ND | NA | ND | NA |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | 0.181 | NA | NA | NA | 0.234 | NA | NA | 0.0117 | NA | ND | NA | ND | NA |
| Chloroform | NE | 940 | 10,000 | mg/kg | 0.0242 | NA | NA | NA | 0.0291 | NA | NA | 0.0211 | NA | 0.0209 | NA | 0.0132 | NA |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | 0.394 | NA | NA | NA | 0.315 | NA | NA | ND | NA | ND | NA | ND | NA |
| Isopropylbenzene | NE | 10,000 | 10,000 | mg/kg | 0.0339 | NA | NA | NA | 0.11 | NA | NA | 1.26 | NA | ND | NA | ND | NA |
| Methyl tert-Butyl Ether | 100 | 10,000 | 10,000 | mg/kg | ND | NA | NA | NA | ND | NA | NA | ND | NA | ND | NA | ND | NA |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | ND | NA | NA | NA | ND | NA | NA | ND | NA | ND | NA | ND | NA |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | 0.72 | NA | NA | NA | 5.61 | NA | NA | 0.589 | NA | 0.0243 | NA | ND | NA |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | NA | NA | NA | ND | NA | NA | 1.16 | NA | ND | NA | ND | NA |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | 0.0871 | NA | NA | NA | 0.165 | NA | NA | 1.5 | NA | ND | NA | ND | NA |
| sec-Butylbenzene | NE | NE | 10,000 | mg/kg | 0.029 | NA | NA | NA | 0.132 | NA | NA | 1.85 | NA | ND | NA | ND | NA |
| Styrene | 64 | 190 | 10,000 | mg/kg | ND | NA | NA | NA | ND | NA | NA | ND | NA | ND | NA | ND | NA |
| tert-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | NA | NA | NA | ND | NA | NA | 0.16 | NA | ND | NA | ND | NA |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | 0.264 | NA | NA | NA | 0.474 | NA | NA | 0.0716 | NA | ND | NA | ND | NA |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | 0.681 | NA | NA | NA | 1.3 | NA | NA | 0.12 | NA | ND | NA | ND | NA |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | 3,790 | 631,000 | 606,000 | 1920 | 4,250 | 68,500 | 15300 | 7,460 | 8430 | 49 | 8140 | ND | 6330 |
| Inorganic Compounds | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | 2.67 | NA | NA | NA | 4.89 | NA | NA | ND | NA | ND | NA | ND | NA |
| Antimony | NE | 820 | 10,000 | mg/kg | 80.4 | NA | NA | NA | 9.1 | NA | NA | ND | NA | ND | NA | ND | NA |
| Arsenic | NE | 7 | 10,000 | mg/kg | 46.4 | NA | NA | NA | 81.9 | NA | NA | 10.9 | NA | 4.2 | NA | 8.5 | NA |
| Beryllium | NE | 1.5 | 10,000 | mg/kg | 0.55 | NA | NA | NA | 0.44 | NA | NA | 0.39 | NA | 0.22 | NA | 0.34 | NA |
| Cadmium | NE | 1,000 | 10,000 | mg/kg | 3.32 | NA | NA | NA | 2.88 | NA | NA | ND | NA | ND | NA | NA | NA |
| Chromium | NE | 10,000 | 10,000 | mg/kg | 13.6 | NA | NA | NA | 5.9 | NA | NA | 10.4 | NA | 4.1 | NA | 7.1 | NA |
| Copper | NE | 10,000 | 10,000 | mg/kg | 1,750 | NA | NA | NA | 233 | NA | NA | 16 | NA | 9.4 | NA | 9.8 | NA |
| Iron | NE | NE | NE | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | NE | 500 | 10,000 | mg/kg | 1,610 | NA | NA | NA | 245 | NA | NA | 16.2 | NA | ND | NA | ND | NA |
| Mercury | NE | 610 | 10,000 | mg/kg | 1.37 | NA | NA | NA | 0.415 | NA | NA | ND | NA | 0.042 | NA | ND | NA |
| Nickel | NE | 10,000 | 10,000 | mg/kg | 57.9 | NA | NA | NA | 10.5 | NA | NA | 13.6 | NA | 7.2 | NA | 10.2 | NA |
| Silver | NE | 10,000 | 10,000 | mg/kg | 2.51 | NA | NA | NA | 1.16 | NA | NA | 0.49 | NA | ND | NA | ND | NA |
| Thallium | NE | 140 | 10,000 | mg/kg | ND | NA | NA | NA | 2.05 | NA | NA | ND | NA | ND | NA | ND | NA |
| Zinc | NE | 10,000 | 10,000 | mg/kg | 1,280 | NA | NA | NA | 97.5 | NA | NA | 45.5 | NA | 92.1 | NA | 23.1 | NA |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | | | | | | | | | |
| Aroclor 1260 | 10 | 10 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | 10000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dinitrotoluene | NE | 8.4 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | 2.3 | NA | NA | NA | 10.8 | NA | NA | ND | NA | ND | NA | ND | NA |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Nitroaniline | NE | 8200 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | ND | NA | NA | NA | ND | NA | NA | ND | NA | ND | NA | ND | NA |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | 5.14 | NA | NA | NA | 30.3 | NA | NA | ND | NA | ND | NA | ND | NA |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | 5.91 | NA | NA | NA | 28.1 | NA | NA | ND | NA | ND | NA | ND | NA |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | 19 | NA | NA | NA | 97.3 | NA | NA | ND | NA | ND | NA | ND | NA |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | 15.7 | NA | NA | NA | 67.4 | NA | NA | ND | NA | ND | NA | ND | NA |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | 19.5 | NA | NA | NA | 83.4 | NA | NA | ND | NA | ND | NA | ND | NA |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | 8.45 | NA | NA | NA | 15.5 | NA | NA | ND | NA | ND | NA | ND | NA |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | 7.57 | NA | NA | NA | 46.4 | NA | NA | ND | NA | ND | NA | ND | NA |
| Carbazole | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | 780 | 10,000 | mg/kg | 18 | NA | NA | NA | 85.1 | NA | NA | ND | NA | ND | NA | ND | NA |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | 3.7 | NA | NA | NA | 8.48 | NA | NA | ND | NA | ND | NA | ND | NA |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | 30.2 | NA | NA | NA | 154 | NA | NA | ND | NA | ND | NA | ND | NA |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | 2.27 | NA | NA | NA | 15.5 | NA | NA | ND | NA | ND | NA | ND | NA |
| Hexachloroethane | NE | 410 | 10,000 | mg/kg | ND | NA | NA | NA | ND | NA | NA | ND | NA | ND | NA | ND | NA |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | 8.38 | NA | NA | NA | 16.5 | NA | NA | ND | NA | ND | NA | ND | NA |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | 5.34 | NA | NA | NA | 16.3 | NA | NA | ND | NA | ND | NA | ND | NA |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | 16.9 | NA | NA | NA | 99.7 | NA | NA | 0.538 | NA | ND | NA | ND | NA |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | 19.2 | NA | NA | NA | 109 | NA | NA | ND | NA | ND | NA | ND | NA |

Notes:

ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

TABLE Q-2 - SOIL TPH FINGERPRINTING RESULTS
DRAINAGE REHABILITATION AREA DATA GAP
642 Allens Avenue
Providence, Rhode Island

File No. 03.0033554.01
12/27/2023

| | Units | RCA-1 6-9 FT 1994 | Test Pit E86 | | | | GZ-304D | GZ-304D | GZ-305S |
|-------------------------------------|-------|-------------------------|----------------|-----------------|------------|--------------|---------------------------|---------------------------|---|
| | | | 4.5 FT - Wet | 3 FT - Loose | 4 FT - Mod | 4 FT - Dense | 8-10 FT | 12-14 FT | 8-10 FT |
| | | | 9/25/2000 | | | | 5/28/2014 | 5/28/2014 | 5/22/2014 |
| | | | | | | | Note 1 | Note 1 | Note 1 |
| Total Petroleum Hydrocarbons | | | | | | | | | |
| TPH | mg/kg | Note 2 | 1,360 | 211 | 224,000 | 112,000 | 631,000 | 606,000 | 1920 |
| TPH Fingerprint | NA | Coal Tar | Fuel Oil No. 6 | Lubricating Oil | Coal Tar | Coal Tar | Tar Impacted Hydrocarbons | Tar Impacted Hydrocarbons | Mix of Middle Distillate Petroleum, Heavy Petroleum and Tar Impacted Hydrocarbons |

Notes:

- Note 1 - The tar material present in this sample indicates varying degrees of weathering.
- Note 2 - TPH Hydrocarbon Content is noted as qualitative results only.

TABLE Q-2 - SOIL TPH FINGERPRINTING RESULTS
DRAINAGE REHABILITATION AREA DATA GAP
 642 Allens Avenue
 Providence, Rhode Island

File No. 03.0033554.01
 12/27/2023

| | Units | GZ-306S | GZ-306S | GZ-307S | GZ-308S | GZ-309D |
|-------------------------------------|-------|---------------------------|---|--------------------------------------|--------------------------------------|--------------------------------------|
| | | 6-8 FT | 8-10 FT | 10-12 FT | 6-8 FT | 6-8 FT |
| | | 5/22/2014 | 5/22/2014 | 6/3/2014 | 6/4/2014 | 5/20/2014 |
| | | Note 1 | Note 1 | | | |
| Total Petroleum Hydrocarbons | | | | | | |
| TPH | mg/kg | 68,500 | 15300 | 8430 | 8140 | 6330 |
| TPH Fingerprint | NA | Tar Impacted Hydrocarbons | Mix of Middle Distillate Petroleum, Heavy Petroleum and Tar Impacted Hydrocarbons | Majority Middle Distillate Petroleum | Majority Middle Distillate Petroleum | Majority Middle Distillate Petroleum |

Notes:

- Note 1 - The tar material present in this sample indicates varying degrees of weathering.
- Note 2 - TPH Hydrocarbon Content is noted as qualitative results only.

TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | December 2009 | | | | | | | June 2010 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.72 | - | 14.73 | 6.10 | NP | NP | 6.10 | - | 6.67 | - | 15.39 | 5.15 | NP | NP | 5.15 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the Former CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 NI - Not Installed

TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2011 | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.45 | - | 15.4 | 5.37 | NP | NP | 5.37 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.54 | - | 10.9 | 5.79 | NP | NP | 5.79 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI |

Notes

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TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | August 2011 | | | | | | | February 2012 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.66 | - | 15.4 | 5.16 | NP | NP | 5.16 | - | 6.33 | - | 15.5 | 5.49 | NP | NP | 5.49 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 7.56 | - | 10.9 | 2.77 | NP | NP | 2.77 | - | 4.54 | - | 10.98 | 5.79 | NP | NP | 5.79 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |

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TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2012 | | | | | | | February 2013 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.41 | - | 15.41 | 5.41 | NP | NP | 5.41 | - | 6.69 | - | 15.4 | 5.13 | NP | NP | 5.13 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.81 | - | 10.85 | 5.52 | NP | NP | 5.52 | - | 4.88 | - | 10.88 | 5.45 | NP | NP | 5.45 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |

Notes
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**TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | November 2013 | | | | | | | June 2014 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 7.19 | - | 15.45 | 4.63 | NP | NP | 4.63 | - | 6.32 | - | 15.5 | 5.50 | NP | NP | 5.50 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.81 | - | 10.9 | 5.52 | NP | NP | 5.52 | - | 4.55 | - | 11.5 | 5.78 | NP | NP | 5.78 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 6.55 | - | 29.7 | 5.40 | NP | NP | 5.40 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 6.8 | - | 14.15 | 4.84 | NP | NP | 4.84 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 6.59 | - | 14.9 | 4.90 | NP | NP | 4.90 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 4.73 | - | 14.15 | 5.45 | NP | NP | 5.45 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 1.79 | - | 11.58 | 7.17 | NP | NP | 7.17 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 4.44 | - | 29.9 | 5.39 | NP | NP | 5.39 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the Former CNG Fueling Station portion of the Property
- Elevations are relative to NAVD88
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
- NI - Not Installed

TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2, 2014 | | | | | | | July 23, 2014 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.3 | - | 15.45 | 5.52 | NP | NP | 5.52 | - | 6.25 | - | 15.45 | 5.57 | NP | NP | 5.57 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.65 | - | 11.35 | 5.68 | NP | NP | 5.68 | - | 4.65 | - | 11.31 | 5.68 | NP | NP | 5.68 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.45 | - | 29.58 | 5.50 | NP | NP | 5.50 | - | 6.45 | - | 29.57 | 5.50 | NP | NP | 5.50 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 6.75 | - | 14.16 | 4.89 | NP | NP | 4.89 | - | 6.72 | - | 14.15 | 4.92 | NP | NP | 4.92 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 6.55 | - | 14.8 | 4.94 | NP | NP | 4.94 | - | 6.52 | - | 14.78 | 4.97 | NP | NP | 4.97 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | - | 4.86 | - | 14.01 | 5.32 | NP | NP | 5.32 | - | 4.85 | - | 13.98 | 5.33 | NP | NP | 5.33 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 2.58 | - | 11.41 | 6.38 | NP | NP | 6.38 | - | 2.46 | - | 11.36 | 6.50 | NP | NP | 6.50 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.11 | - | 29.9 | 5.72 | NP | NP | 5.72 | - | 4.02 | - | 29.9 | 5.81 | NP | NP | 5.81 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | October 2014 | | | | | | | April 2015 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 7.57 | - | 15.43 | 4.25 | NP | NP | 4.25 | - | 6.02 | - | 14.97 | 5.80 | NP | NP | 5.80 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 4.92 | - | 11.35 | 5.41 | NP | NP | 5.41 | - | 3.82 | - | 11.3 | 6.51 | NP | NP | 6.51 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 7.00 | - | 29.62 | 4.95 | NP | NP | 4.95 | - | 6.18 | - | 29.76 | 5.77 | NP | NP | 5.77 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 6.94 | - | 14.14 | 4.70 | NP | NP | 4.70 | - | 6.31 | - | 14.31 | 5.33 | NP | NP | 5.33 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 6.73 | - | 14.77 | 4.76 | NP | NP | 4.76 | - | 6.05 | - | 14.83 | 5.44 | NP | NP | 5.44 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | - | 5.09 | - | 14 | 5.09 | NP | NP | 5.09 | - | 3.84 | - | 14.04 | 6.34 | NP | NP | 6.34 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 2.5 | - | 11.5 | 6.46 | NP | NP | 6.46 | - | 1.23 | - | 11.4 | 7.73 | NP | NP | 7.73 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.53 | - | 29.9 | 5.30 | NP | NP | 5.30 | - | 3.59 | - | 29.9 | 6.24 | NP | NP | 6.24 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the Former CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 NI - Not Installed

TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | | October 2015 | | | | | | | May 2016 | | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.72 | - | 15.61 | 5.10 | NP | NP | 5.10 | - | 6.1 | - | 15.4 | 5.72 | NP | NP | 5.72 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 5.13 | - | 11.64 | 5.20 | NP | NP | 5.20 | - | 4.5 | - | 11.32 | 5.83 | NP | NP | 5.83 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.45 | - | 29.6 | 5.50 | NP | NP | 5.50 | - | 6.01 | - | 29.5 | 5.94 | NP | NP | 5.94 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 7.13 | - | 14.32 | 4.51 | NP | NP | 4.51 | - | 6.45 | - | 14.12 | 5.19 | NP | NP | 5.19 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 6.96 | - | 14.96 | 4.53 | NP | NP | 4.53 | - | 6.05 | - | 14.75 | 5.44 | NP | NP | 5.44 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | - | 5.24 | - | 14.22 | 4.94 | NP | NP | 4.94 | 4.47 | 4.55 | - | 14 | 5.63 | 0.08 | NP | 5.70 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 2.78 | - | 11.76 | 6.18 | NP | NP | 6.18 | - | 2.2 | - | 11.38 | 6.76 | NP | NP | 6.76 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.58 | - | 30 | 5.25 | NP | NP | 5.25 | - | 4.05 | - | 29.8 | 5.78 | NP | NP | 5.78 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

**TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | October 2016 | | | | | | | May 2017 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 6.57 | - | 15.4 | 5.25 | NP | NP | 5.25 | - | 5.97 | - | 15.42 | 5.85 | NP | NP | 5.85 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 5.01 | - | 11.35 | 5.32 | NP | NP | 5.32 | Unable to open | | | | | | | |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.52 | - | 29.57 | 5.43 | NP | NP | 5.43 | - | 7.60 | - | 29.50 | 4.35 | NP | NP | 4.35 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 6.88 | - | 14.15 | 4.76 | NP | NP | 4.76 | - | 5.80 | - | 14.1 | 5.84 | NP | NP | 5.84 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 6.66 | - | 14.72 | 4.83 | NP | NP | 4.83 | - | 5.61 | - | 14.65 | 5.88 | NP | NP | 5.88 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | 5.05 | 5.1 | - | 14 | 5.08 | 0.05 | NP | 5.12 | 3.67 | 3.69 | - | 13.97 | 6.49 | 0.02 | NP | 6.51 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 2.62 | - | 11.45 | 6.34 | NP | NP | 6.34 | - | 1.20 | - | 11.36 | 7.76 | NP | NP | 7.76 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | Unable to open | | | | | | | - | 3.64 | - | 11.25 | 6.19 | NP | NP | 6.19 | |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

**TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | March 2018 | | | | | | | November 2018 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.15 | - | 14.91 | 6.67 | NP | NP | 6.67 | - | 4.52 | - | 15.41 | 7.30 | NP | NP | 7.30 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 2.91 | - | 29.70 | 7.42 | NP | NP | 7.42 | - | 3.05 | - | 29.87 | 7.28 | NP | NP | 7.28 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.35 | - | 29.80 | 6.60 | NP | NP | 6.60 | - | 4.65 | - | 29.52 | 7.30 | NP | NP | 7.30 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.41 | - | 14.15 | 6.23 | NP | NP | 6.23 | - | 4.79 | - | 14.11 | 6.85 | NP | NP | 6.85 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.25 | - | 14.70 | 6.24 | NP | NP | 6.24 | - | 4.57 | - | 14.75 | 6.92 | NP | NP | 6.92 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | 3.23 | 3.59 | - | 14.02 | 6.59 | 0.36 | NP | 6.90 | 2.55 | 2.55 | - | 13.96 | 7.63 | trace | NP | 7.63 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | Unable to locate well under snow cover | | | | | | | - | 0.90 | - | 11.05 | 8.06 | NP | NP | 8.06 | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.21 | - | 30 | 6.62 | NP | NP | 6.62 | - | 2.88 | - | 29.87 | 6.95 | NP | NP | 6.95 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2019 | | | | | | | November 2019 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 4.96 | - | 15.45 | 6.86 | NP | NP | 6.86 | - | 5.63 | - | 15.55 | 6.19 | NP | NP | 6.19 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.32 | - | 11.32 | 7.01 | NP | NP | 7.01 | - | 4.19 | - | 11.48 | 6.14 | NP | NP | 6.14 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.00 | - | 29.67 | 6.95 | NP | NP | 6.95 | - | 5.78 | - | 29.84 | 6.17 | NP | NP | 6.17 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.30 | - | 14.15 | 6.34 | NP | NP | 6.34 | - | 5.96 | - | 14.25 | 5.68 | NP | NP | 5.68 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.24 | - | 14.72 | 6.25 | NP | NP | 6.25 | - | 5.86 | - | 14.71 | 5.63 | NP | NP | 5.63 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | 3.55 | 3.6 | - | 14.04 | 6.58 | 0.05 | NP | 6.62 | 4.28 | 4.28 | - | 14.11 | 5.90 | trace | NP | 7.63 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 1.5 | - | 10.98 | 7.46 | NP | NP | 7.46 | - | 2.72 | - | 11.1 | 6.24 | NP | NP | 6.24 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.32 | - | 30 | 6.51 | NP | NP | 6.51 | - | 3.65 | - | 30.25 | 6.18 | NP | NP | 6.18 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

**TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2020 | | | | | | | November 2020 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.37 | - | 15.53 | 6.45 | NP | NP | 6.45 | - | 5.6 | - | 15.4 | 6.22 | NP | NP | 6.22 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.86 | - | 11.34 | 6.47 | NP | NP | 6.47 | - | 4.17 | - | 11.35 | 6.16 | NP | NP | 6.16 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.58 | - | 29.54 | 6.37 | NP | NP | 6.37 | - | 5.71 | - | 29.6 | 6.24 | NP | NP | 6.24 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.73 | - | 14.16 | 5.91 | NP | NP | 5.91 | - | 4.85 | - | 14.2 | 6.79 | NP | NP | 6.79 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.7 | - | 14.77 | 5.79 | NP | NP | 5.79 | - | 5.7 | - | 14.7 | 5.79 | NP | NP | 5.79 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | 4.09 | 4.09 | - | 14.07 | 6.09 | trace | NP | 6.09 | - | 4.14 | - | 14.1 | 6.04 | NP | NP | 6.04 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | - | 2.44 | - | 11 | 6.52 | NP | NP | 6.52 | Unable to locate monitoring well under snow | | | | | | | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.45 | - | 30.01 | 6.38 | NP | NP | 6.38 | - | 3.85 | - | 30.1 | 5.98 | NP | NP | 5.98 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

**TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2021 | | | | | | | | November 2021 | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-----------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|-----------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.29 | - | 14.25 | 6.53 | NP | NP | 6.53 | - | 5.03 | - | 14.65 | 6.79 | NP | NP | 6.79 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.76 | - | 11.35 | 6.57 | NP | NP | 6.57 | - | 3.52 | - | 11.34 | 6.81 | NP | NP | 6.81 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.75 | - | 29.6 | 6.2 | NP | NP | 6.2 | - | 5.11 | - | 29.62 | 6.84 | NP | NP | 6.84 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.72 | - | 14.16 | 5.92 | NP | NP | 5.92 | - | 5.35 | - | 14.16 | 6.29 | NP | NP | 6.29 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.6 | - | 14.74 | 5.89 | NP | NP | 5.89 | - | 5.24 | - | 14.76 | 6.25 | NP | NP | 6.25 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | Trace | 5.72 | - | 14.05 | 4.46 | NP | NP | 4.46 | - | 3.45 | - | 14.04 | 6.73 | NP | NP | 6.73 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | Unable to access well | | | | | | | | Unable to access well | | | | | | | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.4 | - | 30.14 | 6.43 | NP | NP | 6.43 | - | 3.8 | - | 30.09 | 6.03 | NP | NP | 6.03 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the Former CNG Fueling Station portion of the Property
- Elevations are relative to NAVD88
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
- NI - Not Installed

TABLE Q-3
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2022 | | | | | | | | November 2022 | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-----------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|-----------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-1 | 12.21 | 11.82 | 12.21 | Roadbox | Shallow | 6/8/1994 | 15.89 | 6.5 - 16.5 | NP | NP | - | 5.45 | - | 14.65 | 6.37 | NP | NP | 6.37 | - | 5.75 | - | 14.87 | 6.07 | NP | NP | 6.07 |
| NG | VHB-1 | 10.55 | 10.33 | 10.55 | Roadbox | Shallow | 1/15/2002 | 11.72 | 2 - 12 | NP | NP | - | 3.9 | - | 11.25 | 6.43 | NP | NP | 6.43 | - | 4.12 | - | 11.31 | 6.21 | NP | NP | 6.21 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.65 | - | 29.6 | 6.3 | NP | NP | 6.3 | - | 6.37 | - | 29.51 | 5.58 | NP | NP | 5.58 |
| NG | GZ-305S | 11.84 | 11.64 | 11.84 | Roadbox | Shallow | 5/22/2014 | 14.35 | 5 - 15 | NP | NP | - | 5.85 | - | 19.15 | 5.79 | NP | NP | 5.79 | - | 6.11 | - | 14.13 | 5.53 | NP | NP | 5.53 |
| NG | GZ-306S | 11.90 | 11.49 | 11.90 | Roadbox | Shallow | 5/22/2014 | 15.31 | 5 - 15 | NP | NP | - | 5.7 | - | 19.75 | 5.79 | NP | NP | 5.79 | - | 5.97 | - | 14.82 | 5.52 | NP | NP | 5.52 |
| NG | GZ-307S | 10.70 | 10.18 | 10.70 | Roadbox | Shallow | 6/3/2014 | 14.67 | 3 - 13 | trace - 0.36 | NP | - | 4.2 | - | 13.9 | 5.98 | NP | NP | 5.98 | Trace | 4.22 | - | 13.8 | 5.96 | NP | NP | 5.96 |
| NG | GZ-308S | 9.71 | 8.96 | 9.71 | Roadbox | Shallow | 6/4/2014 | 12.33 | 2 - 12 | NP | NP | Unable to access well | | | | | | | | Unable to access well | | | | | | | |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.55 | - | 29.8 | 6.28 | NP | NP | 6.28 | - | 4.08 | - | 29.88 | 5.75 | NP | NP | 5.75 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the Former CNG Fueling Station portion of the Property
- Elevations are relative to NAVD88
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
- NI - Not Installed

TABLE Q-4
HISTORICAL LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
642 Allens Avenue
Providence, Rhode Island

| Date | November 2001 | June 2002 | September 2002 | October 2002 | October 2002 | November 2002 | December 2002 | December 2002 | January 2003 | February 2003 | February 2003 | February 2003 | September 2003 |
|--|---------------|-----------|----------------|--------------|--------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|----------------|
| Natural Gas Regulation Facility | | | | | | | | | | | | | |
| VHB-1 | NI | trace | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | trace |
| GZ-3075 | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |

Notes:

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the Former CNG Fueling Station portion of the Property
- NG - Not Gauged

Please refer to Table 5 for monthly gauging and recovery data for GZ-3075

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

- Gray shading indicates NAPL thickness of equal to or more than 0.01 feet
- ND - Not Detected
- NI - Not Installed Yet
- Dest - Destroyed
- trace - sheen or less than 0.01 feet
- Decom - Decommissioned

TABLE Q-4
HISTORICAL LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
642 Allens Avenue
Providence, Rhode Island

| Date | September 2005 | March 2006 | June 2006 | July 2006 | October 2006 | December 2006 | March 2008 | December 2009 | June 2010 | January 2011 | July 2011 | August 2011 | February 2012 | July 2012 | February 2013 | November 2013 |
|------------------------------|----------------|------------|-----------|-----------|--------------|---------------|------------|---------------|-----------|--------------|-----------|-------------|---------------|-----------|---------------|---------------|
| Natural Gas Regulator | | | | | | | | | | | | | | | | |
| VHB-1 | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | ND | ND | ND | ND | ND | ND |
| GZ-307S | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

NG - Not Gauged

Please refer to Table 5 for monthly gauging and recovery data for GZ-307S

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

Decom - Decommissioned

TABLE Q-4
HISTORICAL LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
 642 Allens Avenue
 Providence, Rhode Island

| Date | June 2014 | July 2, 2014 | July 23, 2014 | October 2014 | April 2015 | October 2015 | May 2016 | October 2016 | May 2017 | March 2018 | November 2018 | June 2019 | November 2019 | June 2020 | November 2020 | June 2021 | November 2021 | June 2022 | November 2022 |
|------------------------------|-----------|--------------|---------------|--------------|------------|--------------|----------|--------------|----------|------------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|-----------|---------------|
| Natural Gas Regulator | | | | | | | | | | | | | | | | | | | |
| VHB-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| GZ-307S | ND | ND | ND | ND | ND | ND | 0.08 | 0.05 | 0.02 | 0.36 | trace | trace | trace | trace | ND | Trace | ND | ND | Trace |

Notes:

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the Former CNG Fueling Station portion of the Property
- NG - Not Gauged

- Gray shading indicates NAPL thickness of equal to or more than 0.01 feet
- ND - Not Detected
- NI - Not Installed Yet
- Dest - Destroyed
- trace - sheen or less than 0.01 feet
- Decom - Decommissioned

Please refer to Table 5 for monthly gauging and recovery data for GZ-307S

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

TABLE Q-5
LNAPL GAUGING AND RECOVERY - GZ-307S
642 Allens Avenue
Providence, Rhode Island

| Date | Depth to LNAPL (feet) | Depth to Water (feet) | LNAPL Thickness (feet) | Estimated Volume Purged (gallons) |
|------------|-----------------------|-----------------------|------------------------|-----------------------------------|
| 6/3/2014 | ND | 4.84 | ND | NR |
| 6/6/2014 | ND | 4.82 | ND | NR |
| 6/16/2014 | ND | 4.73 | ND | NR |
| 7/2/2014 | ND | 4.86 | ND | NR |
| 7/23/2014 | ND | 4.85 | ND | NR |
| 10/30/2014 | ND | 5.09 | ND | NR |
| 4/9/2015 | ND | 3.84 | ND | NR |
| 10/14/2015 | ND | 5.24 | ND | NR |
| 5/18/2016 | 4.47 | 4.55 | 0.08 | NR |
| 7/26/2016 | 5.10 | 5.36 | 0.26 | NR |
| 8/30/2016 | 3.95 | 4.00 | 0.05 | NR |
| 9/16/2016 | 5.26 | 5.59 | 0.33 | NR |
| 10/28/2016 | 5.05 | 5.10 | 0.05 | NR |
| 11/30/2016 | 4.80 | 4.84 | 0.04 | NR |
| 12/13/2016 | 4.95 | 5.04 | 0.09 | NR |
| 5/30/2017 | 3.67 | 3.69 | 0.02 | NR |
| 1/24/2018 | 3.28 | 3.50 | 0.22 | NR |
| 2/21/2018 | 3.23 | 3.52 | 0.29 | NR |
| 3/20/2018 | 3.23 | 3.59 | 0.36 | NR |
| 4/26/2018 | 5.98 | 6.98 | 1.00 | NR |
| 5/15/2018 | 3.97 | 4.47 | 0.50 | trace |
| 6/28/2018 | 4.80 | 4.88 | 0.08 | NR |
| 8/30/2018 | 4.07 | 4.54 | 0.47 | NR |
| 9/5/2018 | 4.67 | 4.75 | 0.08 | 1 |
| 10/1/2018 | 3.19 | 3.20 | 0.01 | NR |
| 10/30/2018 | 3.54 | 3.55 | 0.01 | NR |
| 11/14/2018 | 2.55 | 2.55 | trace | NR |
| 12/19/2018 | 3.64 | 3.64 | trace | NR |
| 1/30/2019 | 3.04 | 3.04 | trace | NR |
| 2/27/2019 | 3.12 | 3.15 | 0.03 | NR |
| 3/20/2019 | 3.14 | 3.14 | trace | NR |
| 4/22/2019 | 3.70 | 3.70 | trace | NR |
| 5/31/2019 | 3.75 | 3.75 | trace | NR |
| 6/26/2019 | 3.72 | 3.72 | trace | NR |
| 7/25/2019 | 3.70 | 3.70 | trace | NR |
| 8/22/2019 | 4.34 | 4.34 | trace | NR |
| 9/27/2019 | 5.57 | 5.70 | 0.13 | NR |
| 10/21/2019 | 4.28 | 4.28 | trace | NR |
| 11/21/2019 | 4.10 | 4.17 | 0.07 | NR |
| 12/18/2019 | 2.59 | 2.68 | 0.09 | NR |

Notes: ND = Not Detected
NR = Not Recovered
trace = <0.01 feet product

TABLE Q-5
LNAPL GAUGING AND RECOVERY - GZ-307S
642 Allens Avenue
Providence, Rhode Island

| Date | Depth to LNAPL (feet) | Depth to Water (feet) | LNAPL Thickness (feet) | Estimated Volume Purged (gallons) |
|------------|-----------------------|-----------------------|------------------------|-----------------------------------|
| 1/24/2020 | 3.95 | 3.99 | 0.04 | NR |
| 2/24/2020 | 3.90 | 3.90 | trace | NR |
| 3/26/2020 | 3.38 | 3.38 | trace | NR |
| 4/23/2020 | 3.08 | 3.08 | trace | NR |
| 5/22/2020 | 3.60 | 3.60 | trace | NR |
| 6/9/2020 | 4.09 | 4.09 | trace | NR |
| 7/17/2020 | 3.47 | 3.47 | trace | NR |
| 8/20/2020 | 4.82 | 4.83 | 0.01 | NR |
| 9/22/2020 | 4.90 | 4.90 | trace | NR |
| 10/26/2020 | 4.50 | 4.50 | trace | NR |
| 11/23/2020 | ND | 4.14 | ND | NR |
| 12/11/2020 | 3.12 | 3.12 | trace | NR |
| 1/22/2021 | ND | 3.45 | trace | NR |
| 2/9/2021 | ND | 3.85 | trace | NR |
| 3/15/2021 | ND | 4.10 | trace | NR |
| 4/20/2021 | ND | 3.70 | trace | NR |
| 5/21/2021 | ND | 4.00 | trace | NR |
| 6/23/2021 | ND | 3.97 | trace | NR |
| 7/26/2021 | ND | 3.43 | trace | NR |
| 8/13/2021 | 3.80 | 3.80 | trace | NR |
| 9/27/2021 | 4.10 | 4.13 | 0.03 | NR |
| 10/18/2021 | ND | 4.16 | trace | NR |
| 11/16/2021 | ND | 3.45 | ND | NR |
| 12/18/2021 | 4.33 | 4.33 | trace | NR |
| 1/21/2022 | ND | 4.19 | ND | NR |
| 2/17/2022 | 3.14 | 3.14 | Trace | NR |
| 3/30/2022 | ND | 3.44 | Trace | NR |
| 4/27/2022 | ND | 4.75 | ND | NR |
| 6/13/2022 | ND | 4.20 | ND | NR |
| 7/7/2022 | ND | 3.80 | ND | NR |
| 8/8/2022 | 4.91 | 4.91 | Trace | NR |
| 9/9/2022 | ND | 4.91 | ND | NR |
| 11/3/2022 | 4.04 | 4.04 | Trace | NR |
| 6/13/2022 | ND | 4.20 | ND | NR |
| 11/24/2022 | 4.22 | 4.22 | trace | NR |

Notes: ND = Not Detected
NR = Not Recovered
trace = <0.01 feet product

**TABLE Q-6 - GROUNDWATER ANALYTICAL DATA
DRAINAGE REHABILITATION AREA DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | RCA-1 | | | | | | | | | | | | | | |
|--|---------------------------------------|------------------------------|-------|-----------------|---------------|------------------|-------------------|-------------------|---------------|------------------|--------------|----------------|-----------|------------------|--------------|-----------------|---------------|---------------|
| | | | | October 1994 | March 1996 | November 2001 | September 2003 | September 2005 | March 2008 | December 2009 | June 2010 | August 2011 | July 2012 | November 2013 | June 2014 | October 2015 | May 2016 | May 2017 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0005 | ND | ND | 0.0004 | 0.0003 | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | 0.005 | 0.005 | 0.0036 | 0.00484 | 0.022 | ND | 0.0031 | ND | 0.0038 | 0.0038 | 0.0036 | 0.0033 | 0.0028 | 0.0016 | 0.0028 |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | 0.013 | 0.0165 | 0.0103 | 0.0127 | 0.0056 | 0.0042 | 0.0011 |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | 0.00143 | 0.0021 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | ND | 0.001 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0006 | ND | ND | 0.0006 | 0.0006 | ND |
| Methylene Chloride | NE | NE | mg/L | 0.005 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | 0.144 | 0.112 | 0.0698 | 0.0143 | ND | 0.0051 | ND | ND | 0.0009 | 0.0124 | ND | ND | 0.0052 | 0.0251 |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | 0.002 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0002 | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.001 | ND | 0.0074 | 0.0067 | 0.0059 |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | 0.0011 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | 0.022 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | 0.038 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | 0.011 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | 0.024 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | 0.012 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | 0.029 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | 0.013 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | 0.022 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | 0.024 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | 0.169 | ND | 0.0133 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | 0.066 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | 0.01 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | 0.024 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | 1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:

ND - Not Detected NE - Not Established
NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE Q-6 - GROUNDWATER ANALYTICAL DATA
DRAINAGE REHABILITATION AREA DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | RCA-1 | | | | | E85 March 2000 | VHB-1 | | | | | | | | |
|--|---------------------------------------|------------------------------|-------|---------------|------------------|------------------|------------------|------------------|----------------------|--------------|--------------|--------------|------------------|--------------|-----------------|-------------|---------------|------------------|
| | | | | March 2018 | November 2019 | November 2020 | November 2021 | November 2022 | | June 2002 | Sept 2003 | Sept 2005 | November 2013 | June 2014 | October 2015 | May 2016 | March 2018 | November 2019 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | 0.0058 | 0.00128 | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | 0.0014 | ND | ND | ND | ND | 0.0004 | 0.0579 | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | 0.0001 | 0.0161 | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | 0.0005 | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | 0.0031 | ND | ND |
| Benzene | 0.14 | 18 | mg/L | 0.0028 | ND | ND | ND | 0.0014 | ND | ND | ND | ND | ND | ND | 0.0002 | 0.0085 | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | 0.0010 | ND | ND | 0.0013 | 0.0051 | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0016 | ND | 0.118 | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | 0.0134 | 0.0123 | 0.0135 | 0.0094 | 0.0118 | 0.0119 | 0.0063 | 0.0061 | 0.0111 |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | 0.0141 | ND | ND | ND | 0.0059 | 0.039 | 0.0109 | 0.0115 | 0.0045 | 0.0011 | 0.0013 | 0.0016 | 2.23 | ND | ND |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | 0.008 | 0.00358 | 0.0059 | 0.0026 | 0.0024 | 0.0024 | 0.0016 | 0.0020 | 0.0014 |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | 0.0052 | 0.00387 | 0.0043 | 0.0031 | 0.0033 | 0.0038 | 0.0004 | 0.0021 | 0.0029 |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | 0.0032 | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | 0.001 | ND | ND | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0108 | ND | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | 0.0028 | ND | ND | ND | 0.0017 | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.001 | 0.0012 | 0.245 | ND |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | ND | ND | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | 0.804 | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:
 ND - Not Detected NE - Not Established
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE Q-6 - GROUNDWATER ANALYTICAL DATA
DRAINAGE REHABILITATION AREA DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | VHB-1 | | | GZ-304D | | | | | | | | | GZ-305S | GZ-306S | GZ-307S |
|--|---------------------------------------|------------------------------|-------|------------------|------------------|------------------|--------------|-----------------|-------------|-------------|---------------|------------------|------------------|------------------|------------------|--------------|--------------|--------------|
| | | | | November 2020 | November 2021 | November 2022 | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 | November 2021 | November 2022 | June 2014 | June 2014 | June 2014 |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | 0.0004 | 0.0003 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | ND | ND | ND | 0.0053 | 0.0023 | 0.002 | ND | ND | 0.0016 | 0.002 | 0.0013 | 0.0012 | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | ND | ND | ND | 0.016 | 0.0168 | 0.0148 | ND | ND | 0.0016 | 0.0024 | 0.0016 | 0.0078 | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | 0.0094 | 0.0087 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0012 | 0.0074 | 0.0241 |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | 0.0005 | 0.0006 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | ND | 0.0012 | 0.046 | ND | 0.0005 | ND | 0.0023 | 0.0232 | ND | 0.0062 | ND | ND | 0.0093 | 0.0104 |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0036 |
| n-Propylbenzene | NE | NE | mg/L | 0.0014 | ND | 0.0011 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0024 | 0.0148 |
| sec-Butylbenzene | NE | NE | mg/L | 0.0026 | 0.0021 | 0.0026 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0051 | 0.0058 |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0019 |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | ND | ND | ND | 0.0002 | 0.0002 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:
 ND - Not Detected NE - Not Established
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE Q-6 - GROUNDWATER ANALYTICAL DATA
DRAINAGE REHABILITATION AREA DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | GZ-308S | | GZ-309D | | | | | | | |
|--|---------------------------------------|------------------------------|-------|--------------|--------------|-----------------|-------------|----------|---------------|------------------|------------------|------------------|------------------|
| | | | | June 2014 | June 2014 | October 2015 | May 2016 | May 2017 | March 2018 | November 2019 | November 2020 | November 2021 | November 2022 |
| Volatile Organic Compounds | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0002 | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0001 | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | 0.0097 | ND | ND | 0.0112 | 0.0071 | ND | ND | ND | ND | ND |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | 0.0028 | ND | ND | 0.0009 | 0.0022 | ND | ND | ND | ND | ND |
| n-Butylbenzene | NE | NE | mg/L | 0.0018 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | 0.0082 | ND | ND | 0.0028 | 0.0019 | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | mg/L | 0.0024 | ND | ND | 0.0033 | 0.0022 | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | 0.001 | ND | ND | 0.0007 | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | 0.0002 | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Semi Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Methylphenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antracene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:

ND - Not Detected
NA - Not Analyzed

NE - Not Established
N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE Q-7 - GROUNDWATER TPH FINGERPRINTING RESULTS
DRAINAGE REHABILITATION AREA DATA GAP**

File No. 03.0033554.01
12/27/2023

642 Allens Avenue
Providence, Rhode Island

| | | |
|-------------------------------------|-----------------|-------------------|
| | Well ID: | RCA-1 |
| | Date: | March 1996 |
| | Units | |
| Total Petroleum Hydrocarbons | | |
| TPH | mg/L | 1 |
| TPH Fingerprint | N/A | Petroleum |

TABLE Q-8 - SHEEN/PRODUCT TPH FINGERPRINTING RESULTS File No. 03.0033554.01
DRAINAGE REHABILITATION AREA DATA GAP 12/27/2023

642 Allens Avenue
 Providence, Rhode Island

| | Units | CB#2 02/24/2012 | CB#1 3/8/2012 | CB#2 3/8/2012 | MH#1 12/05/2012 |
|-------------------------------------|-------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Total Petroleum Hydrocarbons | | | | | |
| TPH | mg/kg | 587,000 | 712,000 | 322,000 | 374,000 |
| TPH Fingerprint | NA | Middle Distillate Petroleum | Middle Distillate Petroleum | Middle Distillate Petroleum | Middle Distillate Petroleum |


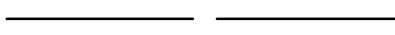















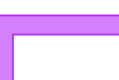



APPENDIX R

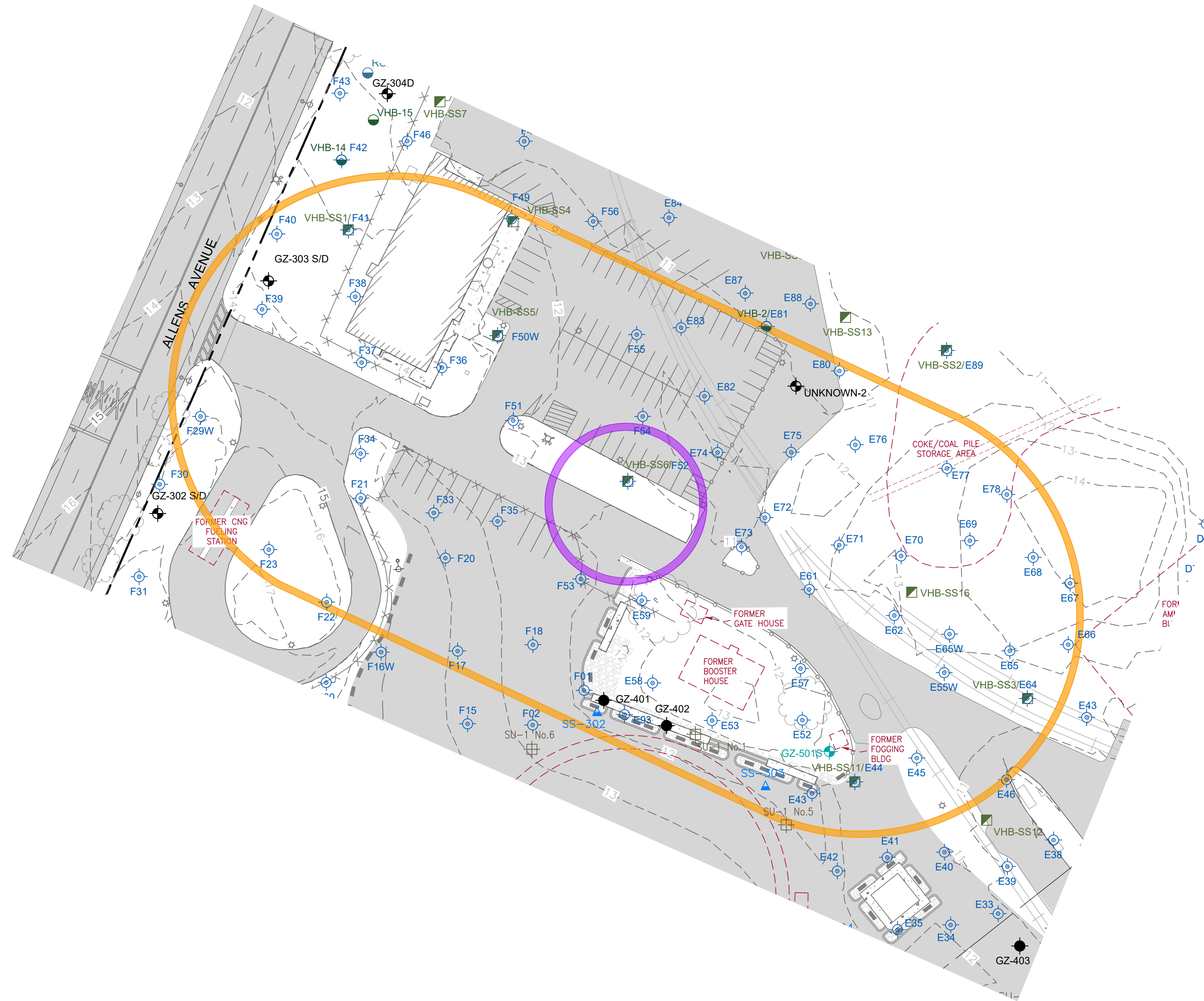
DATA GAP – NATURAL GAS LEAK REPAIR AREA

2023 - GZA GeoEnvironmental, Inc. - GZA-VA-15554.01-SN-FIGURES-CAD-DWG-33554-01 - SITE INVESTIGATION REPORT - ADDENDUM DATA GAP/DATA GAP - NATURAL GAS LEAK REPAIRING 1 - JUNE 1, 2023 10:29 AM LISA THERIAULT




LEGEND:

-  PROPERTY LINE
-  INTERIOR PROPERTY LINE
-  EXISTING BUILDING
-  UTILITY POLE
-  LIGHT POLE
-  UTILITY POLE WITH LIGHT
-  HYDRANT
-  STEEL POST
-  HISTORICAL STRUCTURE OR FEATURE
-  EDGE OF WATER
-  FENCE
-  RAILROAD TRACKS
-  EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
-  EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
-  EXISTING PAVEMENT
-  EXISTING CONCRETE
-  EXISTING RIP RAP
-  APPROXIMATE LIMIT OF NATURAL GAS REPAIR AREA DATA GAP
-  APPROXIMATE LIMIT OF GROUNDWATER DATA EVALUATED FOR NATURAL GAS REPAIR AREA DATA GAP

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

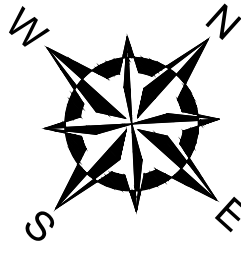


EXPLORATION LEGEND:

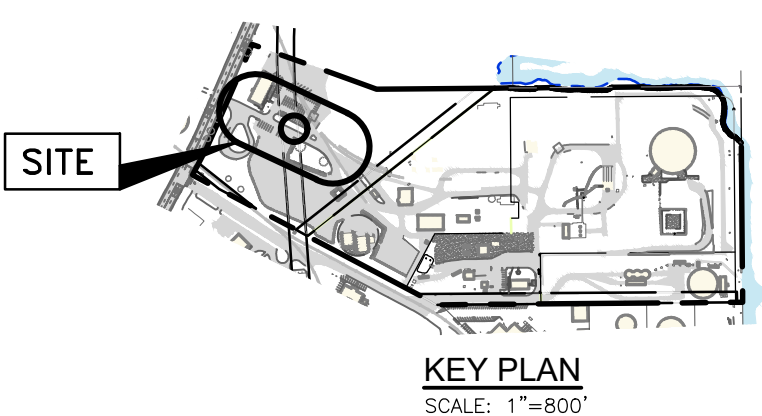
-  GZ-500 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021
-  GZ-401 ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015
-  GZ-314 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014
-  VHB-7 ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003
-  F47 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000
-  1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999
-  RHB-1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998
-  RCA-40 ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996
-  TP-301 ENVIRONMENTAL TEST PITS OBSERVED BY GZA IN 2014
-  VHB TP-101 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
-  TP-39 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
-  ETP-4 ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996
-  SS-301 SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014
-  VHB-SS2 SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003
-  SU-6 No.9 SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995
-  RSS-1 SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995
-  CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
-  RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
-  CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
-  ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
-  PRV-1 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019
-  B-211 GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016
-  GZ-3 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016
-  PP-2 GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015
-  SB-01 GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WA) IN 2015
-  GZA-206 GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
-  GZ-1 GEOTECHNICAL BORING OBSERVED BY GZA IN 2004
-  SWBL13 GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995
-  B-207 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973
-  B-25 GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972
-  PGC-8 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912
-  W155 CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999



**DRAFT COPY
ISSUED FOR REVIEW**

0 25 50 100 150
SCALE IN FEET 1" = 50'




THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.



| | | | |
|--|--|---|--|
| <p>SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND</p> | | | |
| <p>DATA GAP: EXPLORATION LOCATION PLAN NATURAL GAS LEAK REPAIR AREA</p> | | | |
| <p>PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p> | | <p>PREPARED FOR:  Rhode Island Energy RIE.com</p> | |
| <p>PROJ MGR: SH DESIGNED BY: SH DATE: JUNE, 2023</p> | <p>REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO. 33554.01</p> | <p>CHECKED BY: JJC SCALE: AS NOTED REVISION NO. 0</p> | <p>R-1 SHEET NO. 1 OF 1</p> |

TEST BORING LOG

|  272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | | | | | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | | Boring No.: E58 | | |
|---|---------------------|-----------------------------|------------------------|-----------|---|--------------------------|--|------------------------|--|
| | | | | | ESS Job No: P151-002 | | Date: 1/4/00 | | |
| | | | | | Driller.: Environmental Drilling, Inc. | | Within 100' of Water: No | | |
| | | | | | Well Diameter: N/A | | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM | | |
| | | | | | Drilling Method: Geoprobe | | Boring Depth: 6.0' | | |
| | | | | | Sample Method: 4' Acetate Sampler | | Depth to Water: 3.0' | | |
| | | | | | | | Logged By: Daryll Issa | | |
| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) | | | | |
| A | 0-2 | 24/24 | 0855 | 0.0 | (0-6") topsoil and F/M brown sand; dry; no odor. (6-15") F tan sand; dry; no odor. (18-24") small/M black cinders with TR sand; dry; no odor. | | | | |
| B | 2-4 | 39/48 | | 0.0 | (33-36") F/M black sand and black cinders; dry; no odor. (36-72") black cinders and TR black/brown sand; wet; no odor. | | | | |
| C | 4-6 | | 0910 | 0.0 | | | | | |
| D | 6-8 | | | | | | | | |
| E | 8-10 | | | | | | | | |
| F | 10-12 | | | | | | | | |
| G | 12-14 | | | | | | | | |
| <u>Comments:</u> | | | | | | | | | |
| PROPORTIONS USED | | | ABBREVIATIONS | | | Well Construction | | DEPTH INTERVALS | |
| TRACE (TR) | | 0-10% | F = FINE | | | | A = 0-24 in. | G = 144-168 in. | |
| LITTLE (LJ) | | 10-20% | M = MEDIUM | | | | B = 24-48 in. | H = 168-192 in. | |
| SOME (SO) | | 20-35% | C = COARSE | | | | C = 48-72 in. | I = 192-216 in. | |
| AND | | 35-50% | F/M = FINE TO MEDIUM | | | | D = 72-96 in. | J = 216-240 in. | |
| | | | F/C = FINE TO COARSE | | | | E = 96-120 in.. | K = 240-264 in. | |
| | | | M/C = MEDIUM TO COARSE | | | | F = 120-144 in. | L = 264-288 in. | |

TEST BORING LOG



.2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E59

Date: 1/4/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.5'


Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 0925 | 4.5 | (0-7") F/M brown topsoil with TR silt; dry; no odor. (8-17") F/M black stained sand, cinders, and gravel; dry; no odor. (17-24") F tan sand with TR gravel; dry; no odor. |
| B | 2-4 | 42/48 | | 0.0 | (30-36") F/M brown/black sand with SO gravel; dry; no odor. (36-47") F tan sand with TR gravel; dry; no odor. (47-72") Black colored cobbles with brown stained sand; wet at 66", no odor. |
| C | 4-6 | | 0940 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG

|  272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | | | | | Site: Providence Gas Company 642 Allens Avenue, Providence, RI ESS Job No: P151-002 | | | Boring No.: E61 Date: 1/20/00 Within 100' of Water: No | |
|---|---------------------|----------------------------|---------------|-----------|---|-------------------|-----------------|---|--|
| | | | | | Driller.: Environmental Drilling, Inc. | | | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM | |
| | | | | | Well Diameter: N/A | | | Boring Depth: 6.0' | |
| | | | | | Drilling Method: Geoprobe | | | Depth to Water: 5.5' | |
| | | | | | Sample Method: 4' Acetate Sampler | | | Logged By: Daryll Issa | |
| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) | | | | |
| A | 0-2 | 24/24 | 1415 | 0.0 | (0-19") F/M brown sand, gravel, and pulverized stone; dry; no odor. (19-22") F/M brown sand and gravel; dry; no odor. (22-24") F/M light brown sand and gravel; dry; no odor. | | | | |
| B | 2-4 | 38/48 | 1430 | 0.0 | (34-37") F/M dark brown sand (frozen) with SO gravel. (37-40") concrete and pulverized stone. (40-46") F/M brown sand with SO gravel; wet at 66"; no odor. | | | | |
| C | 4-6 | | | 0.0 | | | | | |
| D | 6-8 | | | | | | | | |
| E | 8-10 | | | | | | | | |
| F | 10-12 | | | | | | | | |
| G | 12-14 | | | | | | | | |
| <u>Comments:</u> | | | | | | | | | |
| PROPORTIONS USED | | | ABBREVIATIONS | | | Well Construction | | DEPTH INTERVALS | |
| TRACE (TR) | 0-10% | F = FINE | | | | | A = 0-24 in. | G = 144-168 in. | |
| LITTLE (LJ) | 10-20% | M = MEDIUM | | | | | B = 24-48 in. | H = 168-192 in. | |
| SOME (SO) | 20-35% | C = COARSE | | | | | C = 48-72 in. | I = 192-216 in. | |
| AND | 35-50% | F/M = FINE TO MEDIUM | | | | | D = 72-96 in. | J = 216-240 in. | |
| | | F/C = FINE TO COARSE | | | | | E = 96-120 in. | K = 240-264 in. | |
| | | M/C = MEDIUM TO COARSE | | | | | F = 120-144 in. | L = 264-288 in. | |

TEST BORING LOG



72 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: E71
Date: 1/20/00
Within 100' of Water: No
Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Boring Depth: 6.0'
Depth to Water: 5.0'
Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1150 | 0.0 | (0-8") F dull brown topsoil with TR gravel; dry; no odor. (8-20") F/M light brown to dark brown sand with SO black shiny/dull cinders and LI gravel; dry; no odor. (20-24") F black stained sand; dry; light odor. |
| B | 2-4 | 48/48 | 1210 | 0.0 | |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E72

Date: 1/20/00

Within 100' of Water: No

Instrument: Thermo Environmen.
Instruments, Inc., Model 580B OVN

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1325 | 0.0 | (0-3") topsoil. (3-17") M/large pieces of gravel with LI F/M brown sand; dry; no odor. (17-24") F/M dark brown sand with SO gravel; dry; no odor. |
| B | 2-4 | 48/48 | 1340 | 0.0 | (24-26") F/M black/gray stained sand with LI gravel; dry; no odor. (26-55") F/M brown sand with LI gravel; dry; no odor. (55-72") F/M brown sand with TR silt and LI gravel; saturated with water; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E73 |
| ESS Job No: P151-002 | Date: 1/20/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 5.5' |
| | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1400 | 0.0 | (0-14") F/M brown (frozen) sand with SO gravel; dry; no odor. (14-20") F/M brown sand and pulverized white stone with SO gravel; dry; no odor. (20-24") F/M brown sand with SO gravel. |
| B | 2-4 | 35/48 | 1405 | 0.0 | (37-50") F/M dark brown sand with SO gravel; dry; no odor. (50-58") F/C light brown sand with SO gravel; dry; no odor. (58-72") M/large sized gravel; saturated with water; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: E74
Date: 1/21/00
Within 100' of Water: No
Instrument: Thermo Environment
Instruments, Inc., Model 580B OVM
Boring Depth: 6.0'
Depth to Water: 5.0'
Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 0950 | 0.0 | (0-6") concrete/gravel. (6-18") F/M brown/ dark brown sand with TR gravel and SO bits of coal; dry; no odor. (18-24") F/M gray/black sand with SO cinder ash and bits of coal; dry; no odor. (22-24") yellow sand |
| B | 2-4 | 39/48 | 1005 | 0.0 | (33-37") pulverized stone with SO gray/black F/M sand; dry; no odor. (37-56") F/M brown/dark brown sand with TR gravel and LI cinder ash; dry; light odor. (56-72") F black/gray sand with LI gravel; saturated with water; light sweet odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E75 |
| ESS Job No: P151-002 | Date: 1/19/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 5.0' |
| | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1100 | 0.0 | (0-7") concrete and gravel. (7-17") F/M shiny black cinder ash with SO small black cinders; dry; no odor. (17-24") F/M brown sand with SO gravel; dry; no odor. |
| B | 2-4 | 39/48 | 1120 | 0.0 | (33-56") F/M brown sand with SO gravel; dry; no odor. (56-62") F/M brown sand with LI gravel and TR silt; wet; no odor. (62-72") F/C brown sand with SO gravel; saturated with water; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------------------|------------------------|-------------------|---|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: E76
Date: 1/19/00
Within 100' of Water: No
Instrument: Thermo Environment
Instruments, Inc., Model 580B Ov.
Boring Depth: 6.0'
Depth to Water: 4.0'
Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1130 | 0.0 | (0-4") concrete bits with gray sand. (4-12") F black cinder ash with large cinder ash stone. (12-24") F loose light tan silty sand. |
| B | 2-4 | 48/48 | 1150 | | (24-30") F black cinder ash with large cinder ash stone. (30-44") F loose light tan sand; porous cinders at 36". (44-72") F brown and black sandy soils; iron staining throughout; SO green soils; wet at 48". Sheen observed |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E80 |
| ESS Job No: P151-002 | Date: 1/19/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environment. Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 4.0' |
| | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1200 | 2.2 | (0-15") concrete mixed with F/M brown sand and TR F cinder ash with TR gravel; dry; no odor. (15-24") F brown sand with TR gravel; dry; no odor. |
| B | 2-4 | 43/48 | 1220 | 0.0 | (29-45") F brown sand with TR gravel; dry; no odor. (45-72") F/M brown to dark brown sand with LI silt; blue streaks in interval; saturated with water; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------------------|------------------------|-------------------|---|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: E81
Date: 1/21/00
Within 100' of Water: No
Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Boring Depth: 6.0'
Depth to Water: 4.0'
Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 0920 | 0.0 | (0-9") gravel/asphalt/fill. (9-19") F/M brown sand with SO gravel; dry; no odor. (19-24") F/M dark brown sand with LI gravel; dry; no odor. |
| B | 2-4 | 45/48 | 0935 | 0.0 | (27-39") F/M brown sand with SO gravel; dry; no odor. (39-72") F/M dark brown sand with LI gravel; dry - wet at 50-72"; light odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

PROPORTIONS USED

TRACE (TR) 0-10%
LITTLE (LI) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

Well Construction

DEPTH INTERVALS

A = 0-24 in. G = 144-168 in.
B = 24-48 in. H = 168-192 in.
C = 48-72 in. I = 192-216 in.
D = 72-96 in. J = 216-240 in.
E = 96-120 in. K = 240-264 in.
F = 120-144 in. L = 264-288 in.

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

| | |
|---|---|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E82 |
| ESS Job No: P151-002 | Date: 1/24/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmen. Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 5.8' |
| | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 22/24 | 1410 | 0.0 | (2-4") asphalt/gravel. (4-15") F/M brown sand with SO gravel and LI black cinders; dry; no odor. (15-24") M/large black cinders with SO black cinder ash; dry; no odor. |
| B | 2-4 | 46/48 | | 0.0 | (26-28") F black cinder ash; dry; no odor. (28-72") F/M brown sand and gravel; wet at 66"; no odor. |
| C | 4-6 | | 1435 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (L) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E83 |
| ESS Job No: P151-002 | Date: 1/21/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 5.0' |
| | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 0845 | 0.0 | (0-7") concrete. (7-18") F/M dark brown sand with TR gravel; dry; no odor. (7-18") F/M brown sand with SO gravel; dry; no odor. (22-24") F brown sand with TR silt; dry; no odor. |
| B | 2-4 | 45/48 | 0905 | 0.0 | (27-57") F/M brown sand with SO gravel; dry; no odor. (57-72") F/M brown sand with LI gravel; saturated with water; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| | | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E84

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environmen.
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1400 | 0.0 | (0-6") asphalt with M/large concrete bits. (6-12") M brown silty sand with SO M/large rounded stone. (12-24") F/M black cinder ash with SO orange cinders; F coal bits throughout. |
| B | 2-4 | 36/48 | 1410 | 21.0 | (36-40") F/M black cinder ash with SO orange cinders; F coal bits throughout. (40-48") F/M orange sand; SO M stone throughout. (48-72") M/C black cinder ash with SO coal throughout; F cinder ash at 60-72"; wet at 60". Sheen observed. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|------------------|---------------|------------------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | A = 0-24 in. |
| LITTLE (LJ) | 10-20% | M = MEDIUM | G = 144-168 in. |
| SOME (SO) | 20-35% | C = COARSE | H = 168-192 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | I = 192-216 in. |
| | | F/C = FINE TO COARSE | J = 216-240 in. |
| | | M/C = MEDIUM TO COARSE | K = 240-264 in. |
| | | | L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E87

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1305 | 0.0 | (0-3") concrete/gravel. (3-24") F/M black cinder ash and small shiny black cinders/coal with TR brown sand and TR gravel; dry; no odor. |
| B | 2-4 | 35/48 | 1320 | 0.0 | (37-46") F/M brown sand with TR dull cinders and TR gravel; dry; no odor. (46-53") F/M shiny black cinder ash and small black cinders; dry; no odor. (53-72") F/C cinder ash and small black cinders; wet/saturated with water; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

PROPORTIONS USED

TRACE (TR) 0-10%
LITTLE (L) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS


F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

Well Construction

DEPTH INTERVALS

A = 0-24 in. G = 144-168 in.
B = 24-48 in. H = 168-192 in.
C = 48-72 in. I = 192-216 in.
D = 72-96 in. J = 216-240 in.
E = 96-120 in.. K = 240-264 in.
F = 120-144 in. L = 264-288 in.

TEST BORING LOG


| | | |
|---|---|--|
|  272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E88 |
| | ESS Job No: P151-002 | Date: 1/19/00 |
| | Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| | Well Diameter: N/A | Instrument: Thermo Environment Instruments, Inc., Model 580B OVM |
| | Drilling Method: Geoprobe | Boring Depth: 6.0' |
| | Sample Method: 4' Acetate Sampler | Depth to Water: 4.5' |
| | | Logged By: Nicole Murry |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1235 | 0.0 | (0-2") asphalt and concrete bits. (2-12") F/M brown and black sand with M rounded gravel; (12-13") quartz stone. (13-24") F black cinder ash mixed with M/C cinder ash and black cinders with SO iron staining (18-24"). |
| B | 2-4 | 48/48 | 1250 | | (24-56") F/M black cinder ash mixed with SO orange and C cinders. (56-72") F black cinder ash mixed with coal; tar and cinders; wet at 52". |
| C | 4-6 | | | 16.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|-----------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. |
| | | | G = 144-168 in. |
| | | | H = 168-192 in. |
| | | | I = 192-216 in. |
| | | | J = 216-240 in. |
| | | | K = 240-264 in. |
| | | | L = 264-288 in. |

TEST BORING LOG

|  272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | | | | | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | | Boring No.: F18 | | |
|---|---------------------|----------------------------|----------------------|-----------|--|--------------------------|--|------------------------|--|
| | | | | | ESS Job No: P151-002 | | Date: 1/6/00 | | |
| | | | | | Driller.: Environmental Drilling, Inc. | | Within 100' of Water: No | | |
| | | | | | Well Diameter: N/A | | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM | | |
| | | | | | Drilling Method: Geoprobe | | Boring Depth: 10.0' | | |
| | | | | | Depth to Water: 7.5' | | Logged By: Jason Wiggin | | |
| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) | | | | |
| A | 0-2 | 24/24 | 1420 | 0.0 | (0-5") black topsoil. (6-15") F/C brown/brownish orange sand; SO gravel. (15-24") F/M tan sand; LI silt. | | | | |
| B | 2-4 | 36/48 | 0.0 | 0.0 | (36-38") F/M tan sand; LI silt. (38-72") C black cinders and cinder ash; LI porous cinders. | | | | |
| C | 4-6 | | 1435 | 0.0 | | | | | |
| D | 6-8 | 36/48 | | 0.0 | (84-120") C black cinders/cinder ash; TR porous cinders; moderate petroleum odor below 108). Wet at 90". | | | | |
| E | 8-10 | | | 0.0 | | | | | |
| F | 10-12 | | | | | | | | |
| G | 12-14 | | | | | | | | |
| <u>Comments:</u> | | | | | | | | | |
| PROPORTIONS USED | | | ABBREVIATIONS | | | Well Construction | | DEPTH INTERVALS | |
| TRACE (TR) | 0-10% | F = FINE | | | | | A = 0-24 in. | G = 144-168 in. | |
| LITTLE (LI) | 10-20% | M = MEDIUM | | | | | B = 24-48 in. | H = 168-192 in. | |
| SOME (SO) | 20-35% | C = COARSE | | | | | C = 48-72 in. | I = 192-216 in. | |
| AND | 35-50% | F/M = FINE TO MEDIUM | | | | | D = 72-96 in. | J = 216-240 in. | |
| | | F/C = FINE TO COARSE | | | | | E = 96-120 in.. | K = 240-264 in. | |
| | | M/C = MEDIUM TO COARSE | | | | | F = 120-144 in. | L = 264-288 in. | |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F20

Date: 1/7/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 8.75'

Logged By: Jason Wiggins

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 0940 | 0.0 | (0-5") brown topsoil and organics; F/M sand. (5-13") F/M brown/black sand. (13-24") F/M tan sand; TR silt; TR gravel. |
| B | 2-4 | 36/48 | | 0.0 | (36-72") F/C black cinders/cinder ash; LI porous cinders. |
| C | 4-6 | | 0950 | | |
| D | 6-8 | 27/48 | | | (93-98") F/C black cinders/cinder ash; TR porous cinders. (98-100") F/M brown sand and F/M cinders/cinder ash. (100-120") F/C black cinder ash; SO M/C gravel/porous cinders. Wet at 92". |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F33

Date: 1/7/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 8.5'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1300 | 0.0 | (0-5") topsoil; M brown sand; grass and organics at 0-1". (5-9") F/M dense brown sand. (9-19") F light tan silty sand; soft. (19-24") black stained soil with M/large bits of cinder ash and porous cinders. |
| B | 2-4 | 36/48 | | 0.0 | (36-38") F light tan soils; soft; mixed with SO black stained soil. (38-66") M/C granular cinder ash with M/C porous cinders with coal bits. (66-72") brick; red stained cinder ash and porous cinders. |
| C | 4-6 | | 1310 | | |
| D | 6-8 | 32/48 | | 0.0 | (88-96") black and brick; red stained M/large granular cinder ash with M/large porous cinders. (96-120") M/large granular black cinder ash and porous cinders; saturation at 100%. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

PROPORTIONS USED

TRACE (TR) 0-10%
LITTLE (LI) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS


F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

Well Construction

DEPTH INTERVALS

A = 0-24 in. G = 144-168 in.
B = 24-48 in. H = 168-192 in.
C = 48-72 in. I = 192-216 in.
D = 72-96 in. J = 216-240 in.
E = 96-120 in. K = 240-264 in.
F = 120-144 in. L = 264-288 in.

TEST BORING LOG

| | | |
|---|---|--|
|  2 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: F35 |
| | ESS Job No: P151-002 | Date: 1/11/00 |
| | Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| | Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| | Drilling Method: Geoprobe | Boring Depth: 10.0' |
| | Sample Method: 4' Acetate Sampler | Depth to Water: 7.0' |
| | | Logged By: Nicole Murry |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1400 | 0.0 | (0-4") concrete (asphalt cut prior to drilling). (4-20") F/M brown sand mixed with M/C gravel. (20-24") C cinder ash with M cinders. |
| B | 2-4 | 48/48 | | 0.0 | (24-26") cinder ash. (26-28") F/C brown sand. (28-44") M gray sand mixed with small/M gravel and M cinder ash and porous cinders. (44-72") M/C black cinder ash. |
| C | 4-6 | | 1410 | | |
| D | 6-8 | 36/48 | | 9.0 | |
| E | 8-10 | | | | (84-88") M/C gray sand with large bits of porous cinders. (88-116") C black cinder ash and porous cinders. (116-120") dense black sand with F stained sand; saturation at 88". |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|---|------------------------|-------------------|--|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI ESS Job No: P151-002 | Boring No.: F36 Date: 1/12/00 Within 100' of Water: No |
| Driller.: Environmental Drilling, Inc. | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Well Diameter: N/A | Boring Depth: 10.0' |
| Drilling Method: Geoprobe | Depth to Water: 3.0' |
| Sample Method: 4' Acetate Sampler | Logged By: Nicole Murry |

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1510 | 0.0 | (0-2") grass and roots. (2-8") M dark brown silty sand. (8-9") SO cinders and porous cinders. (9-24") F silty light tan sand; wet. |
| B | 2-4 | 36/48 | | 0.0 | (36-40") F silty light tan sand; wet. (40-56") C black cinder ash mixed with bits of M/large porous cinders. (56-60") dense brown/black silty sand; saturated; no odor. (60-72") very F loose black cinder ash with SO fibrous material at 60"; moist. |
| C | 4-6 | | 1520 | | |
| D | 6-8 | 36/48 | | 0.0 | (86-120") very C cinder ash mixed with porous cinders; saturated at 108". |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--|--|-------------------|--|
| TRACE (TR) 0-10% LITTLE (LI) 10-20% SOME (SO) 20-35% AND 35-50% | F = FINE M = MEDIUM C = COARSE F/M = FINE TO MEDIUM F/C = FINE TO COARSE M/C = MEDIUM TO COARSE | | A = 0-24 in. G = 144-168 in. B = 24-48 in. H = 168-192 in. C = 48-72 in. I = 192-216 in. D = 72-96 in. J = 216-240 in. E = 96-120 in. K = 240-264 in. F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F50

Date: 1/13/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVI

Boring Depth: 10.0'

Depth to Water: 9.0'


Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1510 | 0.0 | (0-7") F/M brown sand with LI wood chips; dry; no odor. (7-24") F/M black sand with SO wood chips and SO dull cinders; dry; no odor. |
| B | 2-4 | 43/48 | | 0.0 | (29-44") F/M brown/dark brown sand with LI gravel; dry; no odor. (44-52") F/M brown sand and gravel; dry; no odor. (52-72") F black cinder ash; dry; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 43/48 | 1530 | 0.0 | (77-99") F/M black stained sand; damp; no odor. (99-108") brick; (108-120") F/M black sand with SO shiny black cinders; wet; odor present. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|---|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | (+1.0-6.0') PVC Solid Riser (6.0-11.0') PVC Screen One inch sump at 11.0' | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LJ) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | F = 120-144 in. | L = 264-288 in. | |

TEST BORING LOG

|  2 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | | | | | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | | Boring No.: F51 | |
|---|---------------------|-----------------------------|----------------------|-----------|---|--|--|-----------------|
| | | | | | ESS Job No: P151-002 | | Date: 1/11/00 | |
| | | | | | Driller.: Environmental Drilling, Inc. | | Within 100' of Water: No | |
| | | | | | Well Diameter: N/A | | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM | |
| | | | | | Drilling Method: Geoprobe | | Boring Depth: 10.0' | |
| | | | | | Sample Method: 4' Acetate Sampler | | Depth to Water: 9.0' | |
| | | | | | Logged By: Nicole Murry | | | |
| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) | | | |
| A | 0-2 | 24/24 | 1425 | 0.0 | (0-1") grass and roots. (1-24") F/M dark brown sand; roots throughout; SO shells; brick at 12-18"; cinder ash and porous cinders with soil staining at 18-24". | | | |
| B | 2-4 | 48/48 | | 0.0 | (24-30") F/M brown sand, cinder ash, and coal/porous cinders. (30-34") C light tan sand with large gravel. (34-72") F silty black stained soil; dense; slight odor. | | | |
| C | 4-6 | | | 0.0 | | | | |
| D | 6-8 | 40/48 | 1450 | | (80-82") C light tan sand with large gravel. (82-86") M light brown silty sand; dense. (86-96") large bits of coal mixed with M brown/black sand. (96-116") C black stained soil with cinder ash. (116-120") M/C light brown (brown at 116") sand; saturation at 96". | | | |
| E | 8-10 | | | 12 | | | | |
| F | 10-12 | | | | | | | |
| G | 12-14 | | | | | | | |
| <u>Comments:</u> | | | | | | | | |
| PROPORTIONS USED | | | ABBREVIATIONS | | Well Construction | | DEPTH INTERVALS | |
| TRACE (TR) | 0-10% | F = FINE | | | | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | | | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | | | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | | | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | | | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | | | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: F52
Date: 1/19/00
Within 100' of Water: No
Instrument: Thermo Environment,
Instruments, Inc., Model 580B OVM
Boring Depth: 6.0'
Depth to Water: 4.0'
Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1000 | 0.0 | (0-8") light gray sand with small/large rounded gravel; coal throughout. (8-24") M/C cinder ash and porous cinders mixed with M black sand. |
| B | 2-4 | 48/48 | 1030 | 0.0 | (24-36") F/M black silty sand with F cinder ash. (60-72") M/C porous cinders with SO black cinder ash; saturation at 48". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LJ) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F53

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 4.5'


Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1045 | 2.0 | (0-20") F/M gray sand with M gravel; SO coal bits at 16-20". (20-24") gray and black sand with C cinder ash and porous cinders. |
| B | 2-4 | 36/48 | 1100 | 0.0 | (36-40") gray and black sand with C cinder ash and porous cinders. (40-72") C black cinder ash with C porous cinders and coal bits; saturation at 52". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG

| | | |
|---|---|---|
|  272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: F54 |
| | ESS Job No: P151-002 | Date: 1/21/00 |
| | Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| | Well Diameter: N/A | Instrument: Thermo Environment, Instruments, Inc., Model 580B OVM |
| | Drilling Method: Geoprobe | Boring Depth: 6.0' |
| | Sample Method: 4' Acetate Sampler | Depth to Water: not determined |
| | Logged By: Daryll Issa | |

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1020 | 0.0 | (0-7") gravel/concrete. (7-24") F/M brown/dark brown sand and gravel with LI black cinders (small); dry; no odor. |
| B | 2-4 | 43/48 | | 0.0 | (29-38") F/M black/brown/dark brown sand with SO gravel and SO M/large black cinders with SO cinder ash; dry; no odor. (38-68") F/M orange/brown/black stained sand with SO shiny/dull black cinders and LI cinder ash; dense; dry; no odor. (60-72") F black cinder ash and F black sand with SO orange staining; damp; no odor. |
| C | 4-6 | | 1040 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------------------|------------------------|-------------------|---|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: F55

Date: 1/19/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 4.0'


Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1515 | 0.0 | (0-2") asphalt and concrete bits. (2-10") F light brown sand mixed with large rounded stones. (10-24") F black cinder ash with M/large bits of coal, porous cinders, and SO large stones at (20-21"). |
| B | 2-4 | 36/48 | 1530 | 0.0 | (36-40") F/M gray loose sand. (40-48") black cinder ash mixed with bits of coal and porous cinders with cinder ash stone. (48-72") F/M loose light brown sand; iron staining at 48-49"; saturated at 48". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG

|  272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | | | | | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | | Boring No.: F56 | |
|---|---------------------------|-----------------------------------|----------------|--------------------------|---|------------------------|---|--|
| | | | | | ESS Job No: P151-002 | | Date: 1/19/00 | |
| | | | | | Driller.: Environmental Drilling, Inc. | | Within 100' of Water: No | |
| | | | | | Well Diameter: N/A | | Instrument: Thermo Environment Instruments, Inc., Model 580B OVI | |
| | | | | | Drilling Method: Geoprobe | | Boring Depth: 6.0' | |
| Sample Method: 4' Acetate Sampler | | Depth to Water: 5.5' | | Logged By: Nicole Murry | | | | |
| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) | | | |
| A | 0-2 | 24/24 | 1435 | 0.0 | (0-2") asphalt and concrete bits. (2-14") F loose light tan sand with SO rounded stone. (14-16") dense cinder ash with coal. (16-18") C red/orange porous cinders. (18-24") loose black cinder ash; SO orange clay at 23". | | | |
| B | 2-4 | 36/48 | | 0.0 | (36-39") F loose gray sand. (37-40") C orange sand; loose. (40-44") large bits of coal with M brick red and orange sand. (44-60") brick red sand with large coal bits. (60-72") C black cinder ash with porous cinders and large bits of coal; wet at 68"; saturation at 66". Sheen observed. | | | |
| C | 4-6 | | 1455 | 0.0 | | | | |
| D | 6-8 | | | | | | | |
| E | 8-10 | | | | | | | |
| F | 10-12 | | | | | | | |
| G | 12-14 | | | | | | | |
| <u>Comments:</u> | | | | | | | | |
| PROPORTIONS USED | | ABBREVIATIONS | | Well Construction | | DEPTH INTERVALS | | |
| TRACE (TR) | 0-10% | F = FINE | | | A = 0-24 in. | G = 144-168 in. | | |
| LITTLE (LI) | 10-20% | M = MEDIUM | | | B = 24-48 in. | H = 168-192 in. | | |
| SOME (SO) | 20-35% | C = COARSE | | | C = 48-72 in. | I = 192-216 in. | | |
| AND | 35-50% | F/M = FINE TO MEDIUM | | | D = 72-96 in. | J = 216-240 in. | | |
| | | F/C = FINE TO COARSE | | | E = 96-120 in.. | K = 240-264 in. | | |
| | | M/C = MEDIUM TO COARSE | | | F = 120-144 in. | L = 264-288 in. | | |

Test Pit Excavation Log



Environmental Science Services, Inc.
272 West Exchange Street, Suite 101
Providence, Rhode Island 02903 (401) 421-0398
Environmental Scientists, Engineers, and Planners



Client Providence Gas Company
Site Name Allens Avenue Remediation Project
Site Address 642 Allens Avenue, Providence, Rhode Island
Job Number P151-002
Contractor Tantara Corporation
Excavator Reach 12 feet

Test Pit No. E76
Date 10/5/00
Observed By Sean Driscoll
Checked By Gary Kaufman
Test Pit Depth 5.5 Feet
Groundwater Depth 5.5 Feet

Test Pit Description

0-2" Asphalt road surface.
3"-12" Black fine to medium cinders and some gravel. No odors.
12"-63" Light brown/yellow fine silty sand, trace blue fine silty sand. Slight odor.
63"-66" Black fine to medium sand. No odor.


Remarks:

Groundwater entering excavation at 5.5 feet. Blue staining observed throughout excavation. During excavation, light brown/yellow fine silty sand took on a dark blue coloration over time. Only slight odor emanating from excavation.

Location/Sketch:

Adjacent to Boring E76. See Figure 2 in SIR.

Test Pit Excavation Log

| | | | | |
|---|-----------------|---|-------------------|-----------------------------------|
|  Environmental Science Services, Inc. 171 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Environmental Scientists, Engineers, and Planners | Client | Providence Gas Company | Test Pit No. | F56 |
| | Site Name | Allens Avenue Remediation Project | Date | 9/25/00 |
| | Site Address | 642 Allens Avenue, Providence, Rhode Island | Observed By | D. Issa, S. Courtemanche, A. Frye |
| | Job Number | P151-002 | Checked By | Gary Kaufman |
| | Contractor | Tantara Corporation | Test Pit Depth | 6 Feet |
| | Excavator Reach | 12 feet | Groundwater Depth | 6 Feet |

Test Pit Description

0-2" Asphalt parking lot.

2-14" Light tan fine sand with some gravel.

14-16" Fine black sand and coal ash. Dry no odors. No measurable PID.

16-24" Slag and red brick with traces of fine sand and silt. Dry.

24-30" Light brown fine to medium sand and gravel.

30-72" Slag and coal with red brick fragments. Wet at 72".

Remarks:

Groundwater entering excavation at approximately 6 feet. No visible sheen.
 No PID readings above background. No discernable odors.

Location/Sketch:

Adjacent to Boring F56. See Figure 2 in SIR.

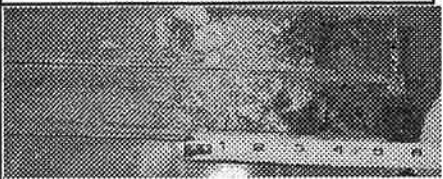
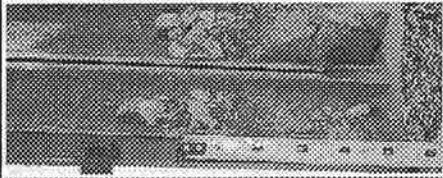
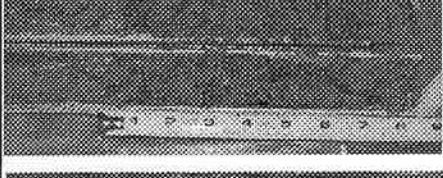
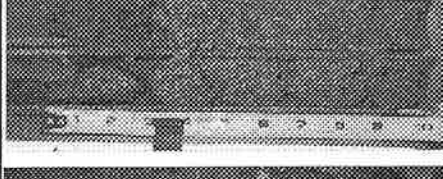
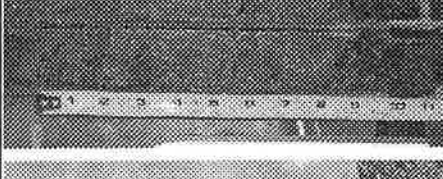
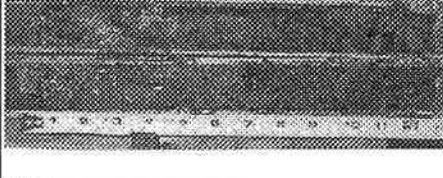
Soil Boring Report

PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. **VHB-2**
 Well ID: **VHB-2**
 Job Number: **71274** Sheet 1 of 1

Drilling Company: **Subsurface Drilling and Remediation** Boring Location: **West of asphalt pile.**
 Driller: **Jim Goldthwaite / Josh Downing** Elevation: **NA** Datum: **NA**
 Inspector: **Keith Sullivan / Adam Rosenblatt** Start Date: **1/16/2002** End Date: **1/16/2002**

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2' split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|--------------------|--|--|
| 0 - 2 | ND | S1 | 24 / 5 | 19 - 18 20 - 19 | 3" Asphalt over 2" black coal fragments, dry, no sheen or odors. |  |
| 2 - 4 | ND | S2 | 24 / 5 | 19 - 7 9 - 8 | 5" Asphalt & coal fragments, dry, no sheen or odors. |  |
| 4 - 6 | ND | S3 | 24 / 8 | 2 - 3 3 - 5 | Dark brown to gray, loose, medium SAND and silt, some rock fragments moist to wet, no sheen or odors. |  |
| 6 - 8 | ND | S4 | 24 / 10 | 2 - 3 2 - 3 | Dark brown to gray, loose, medium SAND and silt, some rock fragments moist to wet, no sheen or odors. |  |
| 8 - 10 | ND | S5 | 24 / 11 | 2 - 9 9 - 6 | 9" Olive gray, fine to medium SAND, some silt over 2" black, fine to medium SAND, trace pebbles, wet, no sheen or odors. |  |
| 10 - 12 | ND | S6 | 24 / 13 | 5 - 5 10 - 9 | Black, fine to coarse coal dust/coal slag, faint chemical odor, wet. |  |
| | | | | | | Bottom of exploration 12' below grade. |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|------------------------------------|----------|------------------------------------|----------|-------------|----------|-------|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

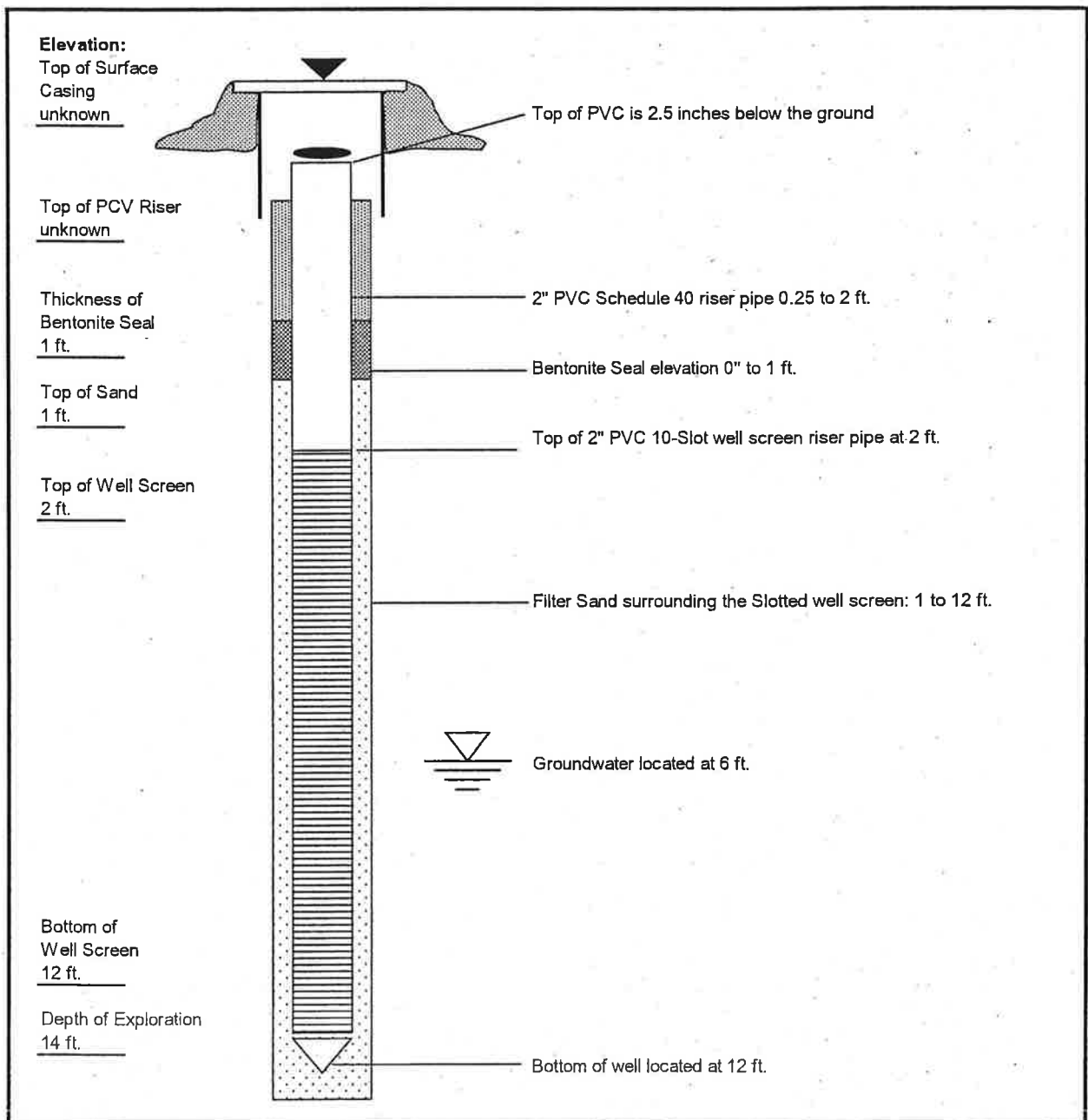
N6

VHB Monitoring Well Diagram

Project Name: New England Gas
Location: 642 Allens Ave
Providence, RI

Project No. 71274
Contractor: Subsurface Drilling
Scientist: K. Sullivan / A. Rosenblatt

Date: 16-Jan-02
Well No. VHB-2
GW Depth: Approx. 6 Feet



**TABLE R-1 - SUBSURFACE SOIL DATA
NATURAL GAS LEAK REPAIR AREA DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | E59 | E73 | F35 | F52 | F53 |
|--|--------------------------------------|------------------|--------------|-------|----------|-----------|-----------|-----------|-----------|
| | | | | | 4-6 FT | 2-4 FT | 4-6 FT | 2-4 FT | 2-4 FT |
| | | | | | 1/4/2000 | 1/20/2000 | 1/11/2000 | 1/19/2000 | 1/19/2000 |
| Volatiles Organic Compounds (VOCs) | | | | | | | | | |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | 0.41 | ND | 0.62 | ND | 0.75 |
| Chloroform | NE | 940 | 10,000 | mg/kg | ND | 0.22 | ND | ND | ND |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | 8.4 | ND |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | 0.14 | ND | 0.16 | ND | ND |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | 0.078 | ND | ND | ND | 1.7 |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | ND | ND | 230 | 19000 | 1200 |
| Inorganic Compounds | | | | | | | | | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | 0.42 | 0.1 | 0.38 | 1.3 | 0.42 |
| Iron | NE | NE | NE | mg/kg | 2120 | 12000 | 5230 | 6090 | 6700 |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | |
| Aroclor 1242 | 10 | 10 | 10,000 | mg/kg | ND | 0.51 | ND | ND | ND |
| Aroclor 1254 | 10 | 10 | 10,000 | mg/kg | ND | ND | 0.057 | ND | ND |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | 21 | 0.4 |
| 4-Methylphenol | NE | NE | 10,000 | mg/kg | ND | ND | ND | 0.98 | ND |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | 3.9 |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | ND | 0.65 | ND | 12 | ND |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | ND | 0.57 | ND | 43 | 10 |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | ND | 2.3 | ND | 100 | 17 |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | ND | 1.3 | ND | 72 | 14 |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | ND | 3.5 | ND | 100 | 16 |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | ND | 1.1 | ND | 26 | 4.4 |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | ND | 1.2 | ND | 40 | 5 |
| Carbazole | NE | NE | 10,000 | mg/kg | ND | ND | ND | 5.6 | 1.5 |
| Chrysene | NE | 780 | 10,000 | mg/kg | ND | 2.2 | ND | 91 | 15 |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | ND | 0.42 | ND | 12 | ND |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | ND | ND | ND | 23 | 0.63 |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | ND | 2.8 | ND | 210 | 30 |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | 8.7 | 3.8 |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | ND | 1.4 | ND | 35 | 5 |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | 40 | ND |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | ND | 1.5 | ND | 190 | 24 |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | ND | 2.5 | ND | 140 | 34 |

Notes:

ND - Not Detected - Not Established sample rejected by the lab
NA - Not Analyzed A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability

TABLE R-2
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2014 | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.42 | - | 14.7 | 7.25 | NP | NP | 7.25 |
| NG | GZ-3035 | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.55 | - | 15.2 | 6.73 | NP | NP | 6.73 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | | | | | | | | |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

TABLE R-2
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2, 2014 | | | | | | | July 23, 2014 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.59 | - | 14.56 | 7.08 | NP | NP | 7.08 | - | 9.66 | - | 14.55 | 7.01 | NP | NP | 7.01 |
| NG | GZ-3035 | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.55 | - | 14.91 | 6.73 | NP | NP | 6.73 | - | 6.62 | - | 14.91 | 6.66 | NP | NP | 6.66 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | | | | | | | | | | | | | | | | |

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Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

TABLE R-2
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | | October 2014 | | | | | | | April 2015 | | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.99 | - | 14.56 | 6.68 | NP | NP | 6.68 | - | 9.4 | - | 14.56 | 7.27 | NP | NP | 7.27 |
| NG | GZ-3035 | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 9.98 | - | 29.97 | 3.30 | NP | NP | 3.30 | - | 6.44 | - | 15.01 | 6.84 | NP | NP | 6.84 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | | | | | | | | | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | | | | | | | | | | | | | | | | |

Notes

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Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

TABLE R-2
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | October 2015 | | | | | | | May 2016 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 10.23 | - | 14.76 | 6.44 | NP | NP | 6.44 | - | 9.9 | - | 14.54 | 6.77 | NP | NP | 6.77 |
| NG | GZ-3035 | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 7.14 | - | 15.12 | 6.14 | NP | NP | 6.14 | - | 6.75 | - | 14.9 | 6.53 | NP | NP | 6.53 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | - | 8.71 | - | 16.25 | 6.21 | NP | NP | 6.21 | - | 8.22 | - | 15.81 | 6.70 | NP | NP | 6.70 |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | | | | | | | | | | | | | | | | |

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Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

TABLE R-2
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | October 2016 | | | | | | | May 2017 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 10.07 | - | 14.52 | 6.60 | NP | NP | 6.60 | - | 9.06 | - | 14.53 | 7.61 | NP | NP | 7.61 |
| NG | GZ-3035 | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 7 | - | 14.9 | 6.28 | NP | NP | 6.28 | - | 6.13 | - | 14.9 | 7.15 | NP | NP | 7.15 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |

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Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

TABLE R-2
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | | | March 2018 | | | | | | | November 2018 | | | | | | | June 2019 | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|--------------------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 8.90 | - | 14.77 | 7.77 | NP | NP | 7.77 | - | 7.98 | - | 14.55 | 8.69 | NP | NP | 8.69 | - | 8.89 | - | 14.5 | 7.78 | NP |
| NG | GZ-303S | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 5.95 | - | 14.86 | 7.33 | NP | NP | 7.33 | - | 5.16 | - | 14.90 | 8.12 | NP | NP | 8.12 | - | 5.9 | - | 14.91 | 7.38 | NP |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | Monitoring well found in Summer 2019 | | | | | | | Monitoring well found in Summer 2019 | | | | | | | Monitoring well found in Summer 2019 | | | | | | | |

Notes

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Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

TABLE R-2
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | November 2019 | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|------------------------|--|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | NP | 7.78 | - | 9.57 | - | 14.63 | 7.10 | NP | NP | 7.10 |
| NG | GZ-3035 | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | NP | 7.38 | - | 6.45 | - | 14.96 | 6.83 | NP | NP | 6.83 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | | | Decommissioned June 2016 | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | r 2019 | | - | 4.56 | - | 10.95 | 6.31 | NP | NP | 6.31 |

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SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2020 | | | | | | | November 2020 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.38 | - | 14.63 | 7.29 | NP | NP | 7.29 | - | 9.48 | - | 14.61 | 7.19 | NP | NP | 7.19 |
| NG | GZ-3035 | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.3 | - | 14.93 | 6.98 | NP | NP | 6.98 | - | 6.03 | - | 15.05 | 7.25 | NP | NP | 7.25 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | Not Found | | | | | | | - | 3.87 | - | 10.6 | 7.00 | NP | NP | 7.00 | |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

TABLE R-2
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2021 | | | | | | | November 2021 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.4 | - | 14.51 | 7.27 | NP | NP | 7.27 | - | 8.99 | - | 14.49 | 7.68 | NP | NP | 7.68 |
| NG | GZ-3035 | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 6.34 | - | 14.94 | 6.94 | NP | NP | 6.94 | - | 5.92 | - | 14.66 | 7.36 | NP | NP | 7.36 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | - | 4.56 | - | 5.88 | 6.31 | NP | NP | 6.31 | - | 3.97 | - | 5.78 | 6.90 | NP | NP | 6.90 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product Observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

TABLE R-2
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2022 | | | | | | | November 2022 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-3025 | 16.97 | 16.67 | 16.97 | Roadbox | Shallow | 6/3/2014 | 15.00 | 5 - 15 | NP | NP | - | 9.2 | - | 14.45 | 7.47 | NP | NP | 7.47 | - | 9.23 | - | 14.53 | 7.44 | NP | NP | 7.44 |
| NG | GZ-3035 | 13.78 | 13.28 | 13.78 | Roadbox | Shallow | 5/28/2014 | 15.70 | 5 - 15 | NP | NP | - | 9.2 | - | 14.45 | 4.08 | NP | NP | 4.08 | - | 13.11 | - | 14.84 | 0.17 | NP | NP | 0.17 |
| NG | GZ-401 | 15.16 | 14.92 | 12.01 | Standpipe | Shallow | 11/2/2015 | 16.25 | 5 - 15 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | Unknown-2 | 10.90 | 10.87 | 11.10 | Standpipe | Shallow | Unknown | 10.95 | Unknown | NP | NP | - | 4.2 | - | 6.05 | 6.67 | NP | NP | 6.67 | - | 4.33 | - | 5 | 6.54 | NP | NP | 6.54 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

Note 1 - The readings reported from monitoring wells GZ-401 and GZ-403 in the October 2014 column were collected on November 3, 2015.

Note 2 - The readings reported from monitoring well Unknown-2 in the November 2020 column were collected on December 21, 2020.

**TABLE R-3 - GROUNDWATER ANALYTICAL DATA
NATURAL GAS LEAK REPAIR AREA DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objectives | RIDEM GB Groundwater UCLs | Units | E55 | F16 | F29 | F50 | VHB-2 | | | GZ-302S | GZ-303S |
|-----------------------------------|---------------------------------------|---------------------------------|-------|---------------|---------------|---------------|---------------|-----------|-------------------|-------------------|-----------|--------------|
| | | | | March 2000 | March 2000 | March 2000 | March 2000 | June 2002 | September 2003 | September 2005 | June 2014 | June 2014 |
| Volatile Organic Compounds | | | | | | | | | | | | |
| Benzene | 0.14 | 18 | mg/L | 0.002 | ND | ND | ND | 0.0028 | ND | 0.0379 | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | NA | NA | NA | NA | ND | ND | ND | 0.0172 | 0.021 |
| Isopropylbenzene | NE | NE | mg/L | NA | NA | NA | NA | ND | ND | 0.0036 | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | ND | ND | 0.009 | ND | 0.0197 | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | 0.0289 | ND |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | ND | ND | ND | 0.0012 | ND | ND |
| Trichloroethene | 0.54 | 87 | mg/L | NA | NA | NA | NA | ND | ND | ND | 0.0128 | ND |
| Vinyl Chloride | 0.002 | NE | mg/L | NA | NA | NA | NA | ND | ND | ND | ND | 0.007 |
| Inorganics | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | 0.225 | NA | NA | NA | NA |

Notes:

ND - Not Detected

NE - Not Established

NA - Not Analyzed

N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. The detected concentrations were compared to RIDEM Method 1 Criteria.

TABLE R-4 - TPH FINGERPRINTING RESULTS
NATURAL GAS LEAK REPAIR AREA DATA GAP

File No. 03.00033554.01
1/5/2024

642 Allens Avenue
Providence, Rhode Island

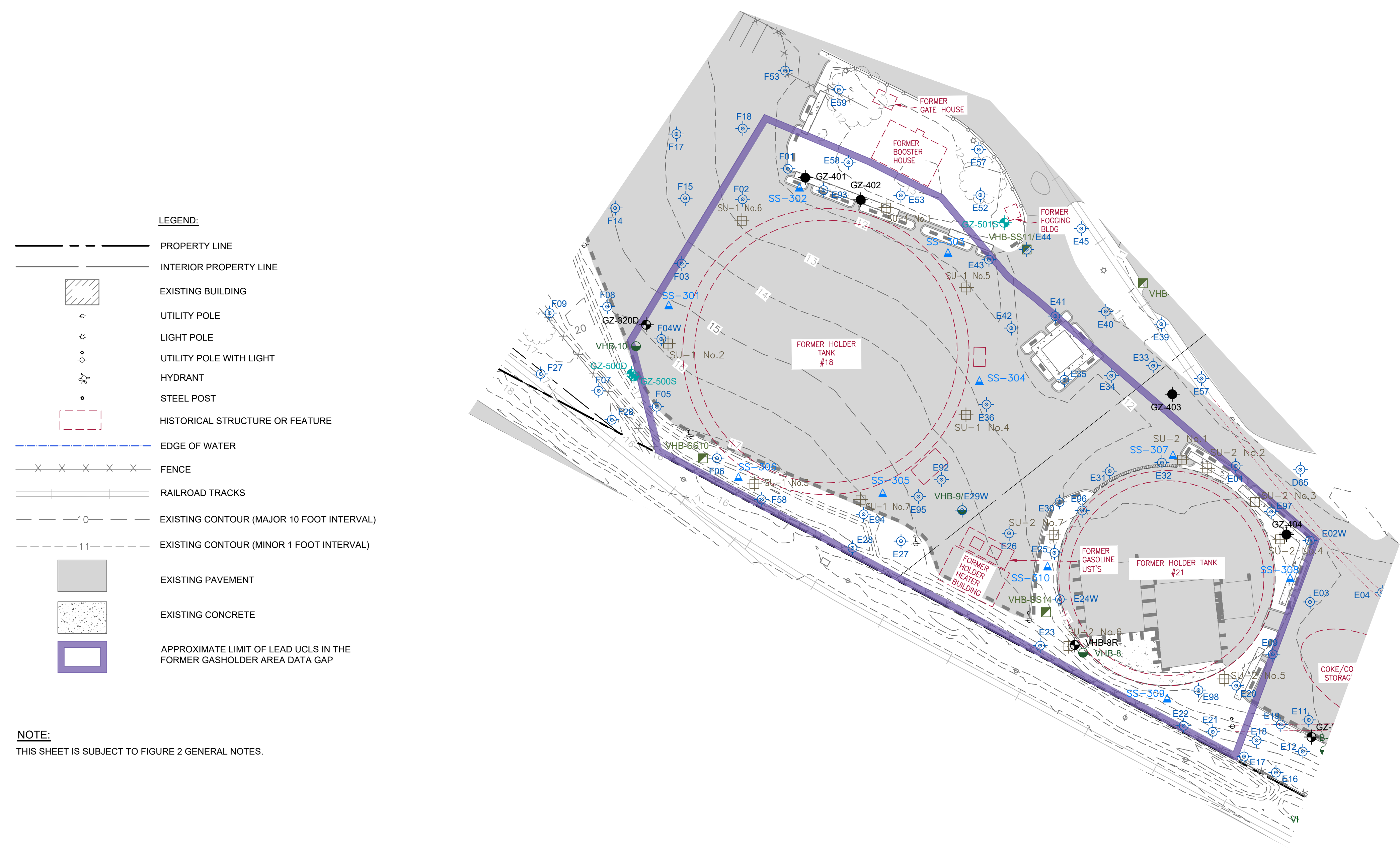
| Total Petroleum Hydrocarbons | Units | Product-Excavation 01/29/2013 |
|------------------------------|-------|--------------------------------------|
| TPH | mg/L | 30.4 |
| TPH Fingerprint | | Heavy Middle Distillate Petroleum |



APPENDIX S

DATA GAP – LEAD UCLs in the FORMER GASHOLDER AREA

2023 - GZA GeoEnvironmental, Inc. - GZA-VA-ENV-33554.01 SITE INVESTIGATION REPORT - ADDENDUM DATA GAP - FORMER GASHOLDER AREA - 1 MAY 31, 2023 2:59 PM LISA THERIAULT



EXPLORATION LEGEND:

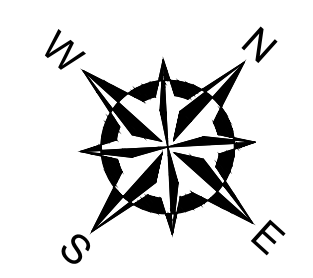
- GZ-500 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021
- GZ-401 ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015
- GZ-314 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014
- VHB-7 ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003
- F47 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000
- 1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999
- RHB-1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998
- RCA-40 ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996
- TP-301 ENVIRONMENTAL TEST PITS OBSERVED BY GZA IN 2014
- VHB TP-101 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
- TP-39 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
- ETP-4 ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996
- SS-301 SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014
- VHB-SS2 SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003
- SU-6 No.9 SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995
- RSS-1 SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995
- CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
- RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
- CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
- ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
- PRV-1 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019
- B-211 GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016
- GZ-3 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016
- PP-2 GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015
- SB-01 GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WA) IN 2015
- GZA-206 GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
- GZ-1 GEOTECHNICAL BORING OBSERVED BY GZA IN 2004
- SWBL13 GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995
- B-207 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973
- B-25 GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972
- PGC-8 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912
- W155 CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999

LEGEND:

- PROPERTY LINE
- INTERIOR PROPERTY LINE
- EXISTING BUILDING
- UTILITY POLE
- LIGHT POLE
- UTILITY POLE WITH LIGHT
- HYDRANT
- STEEL POST
- HISTORICAL STRUCTURE OR FEATURE
- EDGE OF WATER
- FENCE
- RAILROAD TRACKS
- EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- EXISTING PAVEMENT
- EXISTING CONCRETE
- APPROXIMATE LIMIT OF LEAD UCLS IN THE FORMER GASHOLDER AREA DATA GAP

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.

**DRAFT COPY
ISSUED FOR REVIEW**



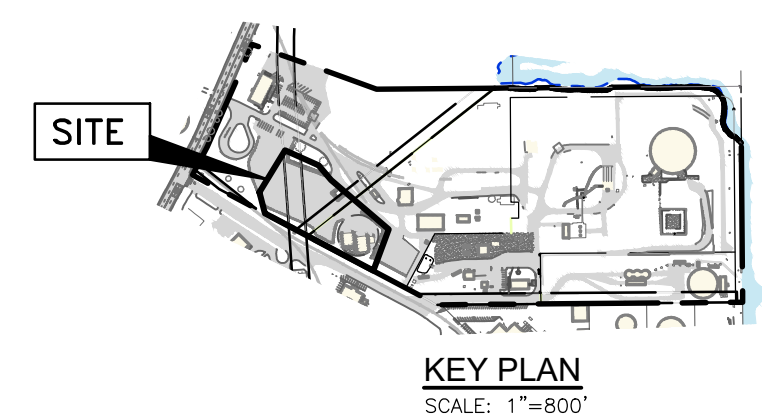
THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

**SITE INVESTIGATION REPORT (SIR) ADDENDUM
642 ALLENS AVENUE
PROVIDENCE, RHODE ISLAND**

**DATA GAP: EXPLORATION LOCATION PLAN
LEAD UCLS IN THE FORMER GASHOLDER AREA**

| | |
|--|--|
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | PREPARED FOR: Rhode Island Energy rhodeislandenergy.com |
|--|--|

| | | | |
|-----------------|----------------------|-----------------|------------------|
| PROJ MGR: SH | REVIEWED BY: MSK | CHECKED BY: JJC | DRAWING |
| DESIGNED BY: SH | DRAWN BY: LDT | SCALE: AS NOTED | S-1 |
| DATE: MAY, 2023 | PROJECT NO. 33554.01 | REVISION NO. 0 | SHEET NO. 1 OF 1 |



**TABLE S-1 - SURFACE SOIL DATA
LEAD UCLs IN THE FORMER GASHOLDER GASHOLDER AREA DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | SU-1 | | | | | | | | | | SU-2 | | | | | | | | | | |
|----------------------------|--------------------------------|---------------|-----------|-------|-------------|----------------|-------------|-------------|----------------|-------------|----------------|-------------|-------------|-------------|------------------|-------------|----------------|-------------|-------------|----------------|-------------|-------------|----------------|-------------|------------------|
| | | | | | No.1 (0-3") | No.1D (12-15") | No.2 (0-3") | No.3 (0-3") | No.3D (12-15") | No.4 (0-3") | No.4D (12-15") | No.5 (0-3") | No.6 (0-3") | No.7 (0-3") | Composite (0-3") | No.1 (0-3") | No.1D (12-15") | No.3 (0-3") | No.4 (0-3") | No.4D (12-15") | No.5 (0-3") | No.6 (0-3") | No.6D (12-15") | No.7 (0-3") | Composite (0-3") |
| | | | | | 1994 | | | | | | | | | | 1994 | | | | | | | | | | |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Lead | NE | 500 | 10,000 | mg/kg | 1430 | 4790 | 8780 | 1790 | 147 | 8220 | 1040 | 1050 | 1720 | 4570 | 15700 | 9520 | 690 | 4800 | 2060 | 1900 | 3900 | 454 | 397 | 3350 | 21800 |
| Leachable Metals | | | | | | | | | | | | | | | | | | | | | | | | | |
| TCLP Lead | NE | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SPLP Lead | NE | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:

ND - Not Detected NE - Not Established R - sample rejected by the lab
NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

TABLE S-1 - SURFACE SOIL DATA
LEAD UCLs IN THE FORMER GASHOLDER GASHOLDER AREA DATA GAP

642 Allens Avenue
 Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | E21 | E22 | E23 | E24 | E25 | E26 | E27 | E28 | E29 | E30 | E31 | E32 | E34 | E35 | E36 | E41 | E42 | E43 | | | |
|----------------------------|-----------------------------------|---------------|-----------|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | | | | | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT |
| | | | | | 12/16/1999 | 12/16/1999 | 12/16/1999 | 12/16/1999 | 12/17/1999 | 12/17/1999 | 12/20/1999 | 12/17/1999 | 12/17/1999 | 12/17/1999 | 12/17/1999 | 12/16/1999 | 12/16/1999 | 12/20/1999 | 12/20/1999 | 12/21/1999 | 12/21/1999 | 12/21/1999 | 12/21/1999 | 12/21/1999 | 12/21/1999 |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Lead | NE | 500 | 10,000 | mg/kg | 242 | 157 | 42.3 | 2770 | 1320 | 542 | 477 | 9280 | 938 | 463 | 318 | 1800 | 231 | 123 | 1450 | 101 | 732 | 452 | | | |
| Leachable Metals | | | | | | | | | | | | | | | | | | | | | | | | | |
| TCLP Lead | NE | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | | |
| SPLP Lead | NE | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | | |

Notes:

ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM Upper Concentration Limits

- This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
- While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

**TABLE S-1 - SURFACE SOIL DATA
LEAD UCLs IN THE FORMER GASHOLDER GASHOLDER AREA DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | E53 | E58 | E93 | E94 | E95 | E96 | E97 | E98 | F01 | F02 | F03 | F04 | F05 | F06 | F58 | SS-301 | SS-302 | SS-303 | SS-304 | SS-305 | SS-306 | | | | |
|----------------------------|-----------------------------------|---------------|-----------|-------|------------|----------|----------|----------|----------|----------|-------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|-------------|-------------|----------|-------------|-----------|-----------|-----------|-----------|-----------|
| | | | | | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-1 FT | 0-1 FT | 0-1 FT | 0-1 FT | 0-1 FT | 0-1 FT | 0-1 FT |
| | | | | | 12/22/1999 | 1/4/2000 | 3/7/2000 | 3/9/2000 | 3/9/2000 | 3/9/2000 | 3/9/2000 | 3/9/2000 | 3/9/2000 | 3/9/2000 | 3/9/2000 | 3/9/2000 | 1/4/2000 | 1/4/2000 | 1/4/2000 | 1/4/2000 | 1/4/2000 | 1/4/2000 | 1/4/2000 | 3/7/2000 | 2014-2015 | 2014-2015 | 2014-2015 | 2014-2015 | 2014-2015 |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Lead | NE | 500 | 10,000 | mg/kg | 454 | 31.8 | 429 | 5410 | 13100 | 14900 | 7710 | 3550 | 107 | 664 | 385 | 20.7 | 200 | 642 | 14.1 | ND | 2090 | 2040 | 448 | 1610 | ND | | | | |
| Leachable Metals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TCLP Lead | NE | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | 4.42 | 5.12 | 11.5 | 3.35 | ND | | | |
| SPLP Lead | NE | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.564 | 0.232 | NA | NA | | | |

Notes:

ND - Not Detected NE - Not Established R - sample rejected by the lab
NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM Upper Concentration Limits

- This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
- While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

TABLE S-1 - SURFACE SOIL DATA
LEAD UCLs IN THE FORMER GASHOLDER GASHOLDER AREA DATA GAP

642 Allens Avenue
 Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | SS-307 | SS-308 | SS-309 | SS-310 |
|----------------------------|-----------------------------------|---------------|-----------|-------|-------------|-------------|-------------|-------------|
| | | | | | 0-1 FT | 0-1 FT | 0-1 FT | 0-1 FT |
| | | | | | 2014-2015 | 2014-2015 | 2014-2015 | 2014-2015 |
| Inorganic Compounds | | | | | | | | |
| Total Lead | NE | 500 | 10,000 | mg/kg | 1390 | 5650 | 4490 | 2880 |
| Leachable Metals | | | | | | | | |
| TCLP Lead | NE | NE | NE | mg/L | 4.75 | 36 | 12.6 | 16.7 |
| SPLP Lead | NE | NE | NE | mg/L | NA | 0.843 | 0.531 | 2.93 |

Notes:

ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

**TABLE S-2 - GROUNDWATER SAMPLES
LEAD UCLs IN THE FORMER GASHOLDER
AREA DATA GAP
642 Allens Avenue
Providence, Rhode Island**

| | RIDEM GB Groundwater Objectives | RIDEM GA & GAA Groundwater Objectives | Client Sample: | Frac Tank | 3-25-13 Influent | 3-28-13 Influent | |
|-----------------------------|---------------------------------------|--|----------------|------------|------------------|------------------|----------|
| | | | Sample Date: | 02/01/2013 | 3/25/2013 | 3/28/2013 | |
| | | | Lab Sample ID: | 1302017-01 | 1303412-01 | 1303500-01 | |
| | | | Matrix: | Aqueous | Aqueous | Aqueous | |
| | | | Units | | | | |
| Total Metals Aqueous | | | | | | | |
| 6020A | Lead | NE | 0.015 | mg/L | 0.206 | 0.0009 | <0.001 D |

Notes:

NE = Not Established

NA = Not Analyzed

D = Sample was diluted in order to obtain a value within the calibration range

The GB Groundwater Objective for naphthalene was calculated in accordance with RIDEM Remediation Regulations

Red Text indicates that the concentration is in excess of RIDEM GA Groundwater Objectives

Gray shading indicates that the concentration is in excess of RIDEM GB Groundwater Objectives

Blue shading indicates that the detection limit is in excess of RIDEM Method 1 Criteria




















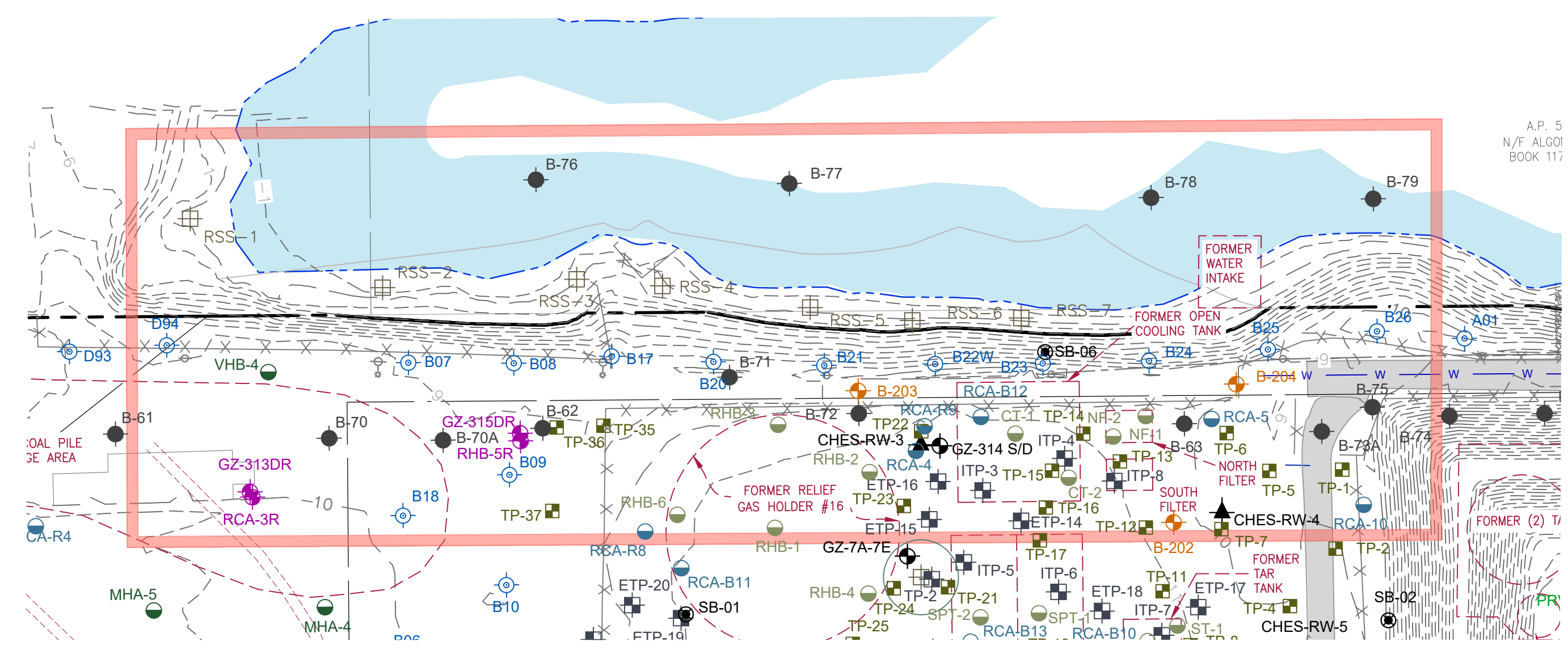
APPENDIX T

DATA GAP – COVE AREA

2023 - GZA GeoEnvironmental, Inc. - GZA-VA-EPA-33554.01-SINFIGURES-CAD-DWG-33554.01 SITE INVESTIGATION REPORT - ADDENDUM DATA GAP DATA GAP - COVE DWS 1 JUNE 8, 2023 10:00 AM THERMAL

LEGEND:

-  PROPERTY LINE
-  INTERIOR PROPERTY LINE
-  EXISTING BUILDING
-  UTILITY POLE
-  LIGHT POLE
-  UTILITY POLE WITH LIGHT
-  HYDRANT
-  STEEL POST
-  HISTORICAL STRUCTURE OR FEATURE
-  EDGE OF WATER
-  FENCE
-  RAILROAD TRACKS
-  EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
-  EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
-  EXISTING PAVEMENT
-  EXISTING CONCRETE
-  APPROXIMATE LIMIT OF COVE AREA DATA GAP



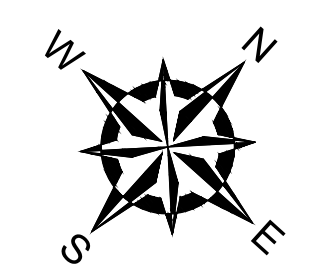
A.P. 5
N/F ALCOO
BOOK 117

EXPLORATION LEGEND:

-  GZ-313DR REPLACEMENT MONITORING WELL OBSERVED BY GZA IN 2023
-  GZ-500 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021
-  GZ-401 ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015
-  GZ-314 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014
-  VHB-7 ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003
-  F47 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000
-  1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999
-  RHB-1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998
-  RCA-40 ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996
-  TP-301 ENVIRONMENTAL TEST PITS OBSERVED BY GZA IN 2014
-  VHB TP-101 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
-  TP-39 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
-  ETP-4 ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996
-  SS-301 SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014
-  VHB-SS2 SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003
-  SU-6 No.9 SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995
-  RSS-1 SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995
-  CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
-  RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
-  CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
-  ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
-  PRV-1 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019
-  B-211 GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016
-  GZ-3 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016
-  PP-2 GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015
-  SB-01 GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WA) IN 2015
-  GZA-206 GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
-  GZ-1 GEOTECHNICAL BORING OBSERVED BY GZA IN 2004
-  SWBL13 GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995
-  B-207 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973
-  B-25 GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972
-  PGC-8 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912
-  W155 CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999

NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.



**DRAFT COPY
ISSUED FOR REVIEW**

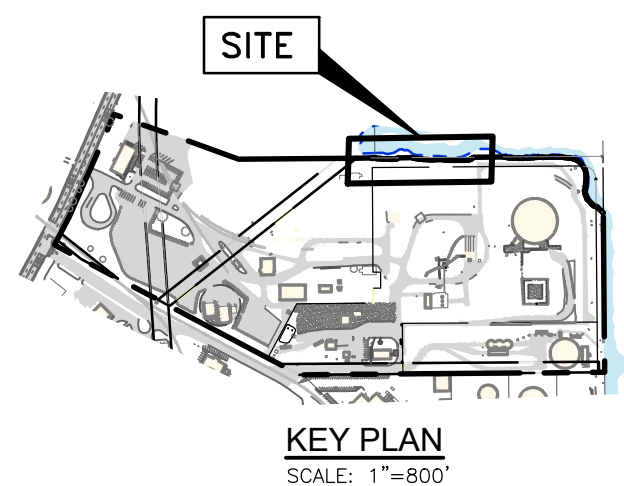


THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

**SIR ADDENDUM
642 ALLENS AVENUE
PROVIDENCE, RHODE ISLAND**

**DATA GAP: EXPLORATION LOCATION PLAN
COVE AREA**

| | | | |
|---|----------------------|---|-----------------------|
| PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | PREPARED FOR:  Rhode Island Energy <small>an eversource company</small> | |
| PROJ MGR: SH | REVIEWED BY: MSK | CHECKED BY: JJC | DRAWING T-1 |
| DESIGNED BY: SH | DRAWN BY: LDT | SCALE: AS NOTED | |
| DATE: JUNE 2023 | PROJECT NO. 33554.01 | REVISION NO. 0 | |
| SHEET NO. 1 OF 1 | | | |



American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE 10/8/71
 HOLE NO. 62
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|------------------------------|---------------|-----------|-----------------------------|------------|
| At <u>8'-9'</u> | after _____ | Hours | Type <u>RODS - "AW"</u> | <u>S/S</u> | _____ | START <u>11/8/71</u> | _____ a.m. |
| At _____ | after _____ | Hours | Size I.D. <u>4" H-2 1/2"</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>11/15/71</u> | _____ p.m. |
| | | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT | TOTAL HRS. _____ | |
| | | | Hammer Fall <u>24"</u> | <u>30"</u> | _____ | BORING FOREMAN <u>Gones</u> | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | | | | | | | | Probed For Utilities From 0'-5' | | | |
| | | | | | | | | 5' | | | | |
| 12 | | 5'-6'6" | D | 4 | 5 | 5 | Moist Loose | | Black Cinders | 1 | 18' | 10' |
| 17 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 19 | | 10'-11'6" | D | 12 | 10 | 8 | " " | | Fill | 2 | 18' | |
| 27 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 10 | | 15'-16'6" | D | 5 | 3 | 3 | " " | 16'6" | No Rec. | | | |
| 5 | | | | | | | | | | | | |
| 7 | | 16'6"-18' | D | 3 | 2 | 2 | | | Organic Silt | 3 | 18' | 10' |
| 11 | | | | | | | | | | | | |
| 10 | | 18'-20' | | | | | | | | | | |
| 18 | | | | | | | | 20'6" | Tube 2" Shelby- 23" Rec. | | | |
| 26 | | | | | | | | | Tried Piston 21'-23', No Penetration | | | |
| 26 | | 21'-23' | D | 10 | 8 | 8 | | | Fine Med. Gravel, Sand, Trace Silt | 4 | 24' | 9" |
| 24 | | | | 7 | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 41 | | 25'-26'6" | D | 18 | 17 | 8 | | | | 5 | 18' | 14' |
| 38 | | | | | | | | 27' | | | | |
| 19 | | 26'6"-27'6" | D | 11 | 3 | 3 | | | Sandy Silt | 6 | 18' | 14' |
| 18 | | | | 3 | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 40 | | 30'-32' | | | | | | | Shelby Missed | | | |
| 27 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 38 | | 32'-34' | PUSHED | | | | | | No. Rec. | | | |
| 30 | | | | | | | | | | | | |
| | | 35'-36'6" | D | 1 | 1 | 2 | | | Soft Gr. Organic Silt | 7 | 18' | 12' |
| | | | | | | | | | | | | |
| | | 38'-39'3" | | | | | | | Piston 16" Rec. | | | |

| | | | | | |
|---------------------------------|------------------|---|----------------------|--------------------|------------|
| GROUND SURFACE TO _____ | | USED _____ | | CASING: THEN _____ | |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | SUMMARY: | |
| D=Dry C=Cored W=Washed | Trace 0 to 10% | Cohesionless Density | Cohesive Consistency | Earth Boring | <u>117</u> |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | 0-4 Soft | Rock Coring | _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | 4-8 M/Stiff | Samples | <u>22</u> |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | 8-15 Stiff | | |
| | | 50+ Very Dense | 15-30 V-Stiff | | |
| | | | | HOLE NO. _____ | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

DATE _____
 HOLE NO. 62
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | BIT _____ | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | 39'6"-41' | D | 3 | 4 | 4 | Soft Moist | | Gr. Organic Silt, Tr. Peat Fibers | 8 | 18" | 14" |
| | | 43'-45' | HP | | | | | 45' | 3" Piston 22" Rec. | | | |
| | | 45'-46'6" | D | 5 | 9 | 8 | Moist Soft | 48' | Med. Gr. Silt Sand, Trace Med. Sand, Tr. Org. | 9 | 13" | 14" |
| | | 50'-51'6" | D | 8 | 10 | 13 | Med. Dense | | Silty Sand, Yellow Gray Mottled Clay Lenses | 10 | 18" | 17" |
| | | 55'-56'6" | D | 18 | 14 | 12 | | | | 11 | 18" | 14" |
| | | 60'-61'6" | D | 16 | 12 | 14 | | | | 12 | 18" | 16" |
| | | 65'-66'6" | D | 28 | 24 | 28 | | 67'6" | | 13 | 16" | 11" |
| | | 70'-71'6" | D | 13 | 20 | 14 | Moist M.D. | | Compact Gr. Silty, Fine Sand | 14 | 18" | 12" |
| | | 75'-76'6" | D | 16 | 14 | 14 | | 78' | | 15 | 18" | 12" |
| | | | | | | | Moist Med. D. | | 2'5" Running Sand @ 80' | | | |
| | | | | | | | | | Med. Comp. Gr. Fine Sand | | | |

Casing

GROUND SURFACE TO _____ USED _____ CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 62

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____
 HOLE NO. 62
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | o.m. |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | p.m. |
| | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | 38 | 80'-82' | D | 6 | 7 | 12 | Moist M.D. | | Med. Comp. Gr. Fine Sand | 16 | 24" | 16" |
| | 32 | | | 14 | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 38 | 85'-87' | D | 6 | 6 | 7 | | | | 17 | 24" | 15" |
| | 42 | | | 6 | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 53 | | | | | | | | | | | |
| | 68 | | | | | | | | | | | |
| | 60 | 90'-91'6" | D | 6 | 8 | 10 | | | | 18 | 18" | 12" |
| | 68 | | | | | | | | | | | |
| | 140 | | | | | | | | | | | |
| | 160 | | | | | | | | | | | |
| | 181 | | | | | | | | | | | |
| | 32 | 95'-97' | D | 5 | 5 | 8 | | | | 19 | 24" | 14" |
| | 61 | | | 9 | | | | | | | | |
| | 68 | | | | | | | | | | | |
| | 96 | | | | | | | | | | | |
| | 124 | | | | | | | | | | | |
| | 126 | 100'-102' | D | 19 | 12 | 11 | | | | 20 | 24" | 10" |
| | 140 | | | 12 | | | | | | | | |
| | 140 | | | | | | | 103' | | | | |
| | 151 | | | | | | | | | | | |
| | 103 | | | | | | | | Comp. Gr. Sand Trace Silt | | | |
| | 64 | 105'-107' | D | 20 | 18 | 20 | | | | 21 | 24" | 18" |
| | 82 | | | 14 | | | | | | | | |
| | 84 | | | | | | | | | | | |
| | 83 | | | | | | | | | | | |
| | 107 | | | | | | | | | | | |
| | 70 | 110'-112' | D | 12 | 12 | 8 | | | | 22 | 24" | 16" |
| | 86 | | | 7 | | | | | | | | |
| | 94 | 115'-117' | D | 20 | 20 | 21 | | 117' | No Rec. | | | |
| | 112 | | | 24 | | | | | Bottom of Boring at 117' | | | |
| | 80 | | | | | | | | | | | |

GROUND SURFACE TO 45'-0" USED 115'-2" CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 117'
 Rock Coring 0
 Samples 22

HOLE NO. 62

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

SHEET 1 OF 4
 DATE 11/8/71
 HOLE NO. 63
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------------|------------------------|---------------|-----------|----------------------------------|------|
| At <u>8'</u> | after <u>16</u> Hours | Type <u>RODS-"AW"</u> | S/S | | START <u>11/8/71</u> | |
| At _____ | after _____ Hours | Size I.D. <u>H+BWF</u> | <u>1 3/8"</u> | | COMPLETE <u>11/12/71</u> | |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>R. Andrews</u> | |
| | | | | | INSPECTOR <u>R. Uarnue</u> | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|-------|--------|------------------------------|---------------------|---|---------------|--------|---------|
| | | | | From 0-6" | 6-12" | 12-18" | | | | No. | Pen | Rec |
| | | | | 4 | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 12 | | 5'-6'6" | D | 7 | 8 | 8 | | | | 1 | 18" | 14' |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | 10'-12'6" | D | 4 | 3 | | | | | 2 | 30'6" | |
| 14 | | | | 2 | 3 | | | | | | | |
| 14 | | | | 4 | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 16 | | 15'-17' | D | 10 | 8 | | | | | 3 | 24'10" | |
| 17 | | | | 4 | 4 | | | | | | | |
| 8 | | | | | | | | 17'6" | | | | |
| 6 | | | | | | | | | | | | |
| 15 | | 19'-20'6" | D | 1 | 1 | 1 | H-Flush Casing | | Gray Org. Silt | 4 | 18'7" | |
| 12 | | | | | | | | | | | | |
| 16 | | 21'-22'8" | UP | | | | | | | UP- | 1 | 20'17" |
| 16 | | | | | | | | | | | | |
| 15 | | 23'-24'6" | D | 2 | 2 | 2 | | | | | 5 | 18" 18" |
| 27 | | | | | | | | | | | | |
| 20 | | | | | | | | | | Duplicate---- | 5 | 18" 18" |
| 19 | | 26'-28' | UP | | | | | | | | 2 | 24'23" |
| 19 | | | | | | | | | | | | |
| 29 | | 28'-29'6" | D | PUSH | | | | | | | 6 | 18'17" |
| 23 | | | | | | | | | | | | |
| 12 | | 31'-33' | UP | | | | | 30' | | | 3 | 24'34" |
| 11 | | | | | | | | | | | | |
| 13 | | 33'-34'6" | D | PUSH | | | BW-Flush Casing | | | | 7 | 18'18" |
| 14 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 17 | | | | | | | | 39'6" | | | | |
| | | | | | | | | | Gray Fine to Med. Sand | | | |

GROUND SURFACE TO 30' USED H "CASING: THEN _____

| | | | |
|---------------------------------|------------------|---|------------------------|
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Earth Boring <u>12</u> |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | Samples <u>25</u> |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50.+ Very Dense | |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 4

DATE _____

HOLE NO. 63

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | BIT _____ | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 12 | | 40'-41'6" D | D | 4 | 5 | 5 | | 42' | Gray Fine to Med. Sand | 8 | 18' | 17" |
| 13 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | BW | | | | | |
| 8 | | 45'-46'6" D | D | 1 | 1 | 1 | | | | 9 | 18' | 16" |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 10 | | | | | | | | 50' | | | | |
| 47 | | 50'-51'6" D | D | 1 | 1 | 2 | H | | | 10 | 18' | 15" |
| 31 | | | | | | | Flush | | | | | |
| 35 | | 53'-55' UP | UP | | | | | | | 4 | 24' | 23" |
| 23 | | | | | | | | | | | | |
| 20 | | | | | | | | 55' | | | | |
| W | | 55'-56'6" D | D | 1 | 1 | 1 | | | | 11 | 18' | 17" |
| A B | | | | | | | BW | | | | | |
| S W/ | | | | | | | Flush | | | | | |
| H F | | | | | | | | 59' | | | | |
| I | | | | | | | | | | | | |
| W | | 60'-61'6" D | D | 1 | 1 | 2 | | | Brown Peaty Silt, Trace Fine to Med. Sand | 12 | 18' | 14" |
| a B | | | | | | | BW | | | | | |
| s W/ | | | | | | | FLUSH | | | | | |
| h F | | | | | | | | | | | | |
| I | | | | | | | | | | | | |
| 1 | | 65'-66'6" D | D | 1 | 2 | 3 | | | Gray Brown Peaty Silt, 67' to 70' Wash Was Lite Gray | 13 | 18' | 13" |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 13 | | | | | | | | 70' | | | | |
| 21 | | 70'-71'6" D | D | 10 | 10 | 11 | | | Black Org. Silt | 14 | 18' | 15" |
| 19 | | | | | | | | | | | | |
| 21 | | | | | | | | 73' | | | | |
| 27 | | | | | | | | | | | | |
| 30 | | | | | | | | | Gray Fine to Coarse Sand, Silt Fine Gravel, Trace Silt | | | |
| 16 | | 75'-76'6" D | D | 8 | 8 | 7 | | | | 15 | 18' | 12" |
| 17 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ CASING: THEN _____

| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
|---------------------------------|------------------|---|--------------------|
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Earth Boring _____ |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | Samples _____ |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | Cohesive Consistency | |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |

HOLE NO
63

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 4
 DATE _____
 HOLE NO. 63
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|--|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 17 | | 80'-81'6" | D | 8 | 8 | 10 | | Gray Fine to Coarse Sand, Trace Silt, Fine Gravel | 16 | 18" | 12" | |
| 19 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 19 | | 85'-86'6" | D | 9 | 12 | 12 | | Sand Ran Back 5' in Pipe | 17 | 18" | 10" | |
| 24 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 34 | | 90'-92' | D | 22 | 16 | | 92' | | 18 | 24" | 8" | |
| 29 | | | | 15 | 16 | | | Gray Fine Sand, Some Silt | | | | |
| 32 | | | | | | | | | | | | |
| 37 | | 95'-97' | D | 12 | 11 | | | | 19 | 24" | 13" | |
| 39 | | | | 11 | 9 | | | | | | | |
| 27 | | 100'-102' | D | 9 | 10 | | | Gray Fine Sand, Trace Silt | 20 | 24" | 16" | |
| 29 | | | | 11 | 11 | | 103' | | | | | |
| 30 | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | |
| 47 | | 105'-107' | D | 12 | 11 | | | Missed Sample at 110' to 112' Went Back Down Hole For Sampled-Sand, Ran Back 11' in Casing | 21 | 24" | 8" | |
| 33 | | | | 14 | 16 | | | | | | | |
| 41 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 71 | | 110'-112' | D | 7 | 8 | | | Gray Fine to Coarse Sand | | | | |
| 63 | | | | 8 | 8 | | 112' | | | | | |
| 95 | | 112'-114' | D | 12 | 11 | | | | 22 | 24" | 12" | |
| 102 | | | | 12 | 14 | | | | | | | |
| 27 | | 115'-117' | D | 12 | 13 | | | | 23 | 24" | 11" | |
| 31 | | | | 13 | 11 | | | | | | | |
| 50 | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: _____ | THEN _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ | | | HOLE NO. <u>63</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE 12/31/71

HOLE NO. 70

LINE & STA. _____

OFFSET _____

SURF. ELEV. 7.6

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Providence Gas Co.

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. 71-508

| | | | | | |
|---|--|--|--|--|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>9'0"</u> after <u>0</u> Hours <u>9:40 AM - 1/3/72</u> with <u>20' HW Casing</u></p> <p>At <u>5'</u> after <u>0</u> Hours <u>No Casing</u></p> | <p>Rods - "AW" Type _____ Size I.D. <u>4" / 2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u></p> | <p>CASING HW _____ BW _____ <u>4" / 2 1/2"</u></p> | <p>SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u></p> | <p>CORE BAR. _____ _____ _____ BIT</p> | <p>Date _____ Time _____</p> <p>START <u>12/31/71</u> <u>_____</u> a.m. COMPLETE <u>1/3/72</u> <u>_____</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>Quagliaroli</u> INSPECTOR <u>R. Varum</u> SOILS ENGR. _____</p> |
|---|--|--|--|--|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---|---|--------|----------|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 10 | | | | | | | | <p>Gray Brown Fine to Coarse SAND, Trace Fine Gravel, Trace Silt, Cinders, Fill</p> <p>Note: 10'-11'6" 3" Rec. On Second Attempt</p> <p>Same (Oil Soaked)</p> | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | 5'-6'6" | D | 4 | 5 | 5 | Moist Loose | | | 1 | 18' | 14" |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | 10'-11'6" | D | 4 | 2 | 2 | Wet Loose | | 2 | 18' | 3" | |
| 11 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | 15'-16'6" | D | 4 | 1 | 1 | Wet | 15'6" | | 3 | 18'12" | |
| 10 | | 16'6"-18' | D | 1 | 1 | 3 | Loose | | | 4 | 18'14" | |
| 15 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 26 | | | | | | | | 20' | | | | |
| 9 | | 20'-21'6" | D | 8 | 2 | 1 | Wet Loose | | | 0 | 18' 0 | |
| 16 | | 21'6"-23' | D | 7 | 5 | 2 | | | | 0 | 18' 0 | |
| 17 | | 23'-25' | W | | | | | | | 5 | Wash Sam | |
| 19 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 8 | | 25'-26'6" | D | 12 | 13 | 12 | Wet M.D. | | | 6 | 18" 4" | |
| 9 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | 30' | | | | |
| 8 | | 30'-31'6" | D | 16 | 17 | 19 | Wet Dense | | | 7 | 18'14" | |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 15 | | 35'-36'6" | D | 12 | 16 | 17 | Wet Dense | | | 8 | 18'12" | |
| 26 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 42 | | 40'-41'6" | D | 42 | 24 | 27 | Wet V.D. | | | 9 | 18'14" | |

| | | | |
|--|--|--|---|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>"CASING: THEN _____</p> <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense</p> <p>Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring <u>51'6"</u> Rock Coring _____ Samples <u>11</u></p> <p>HOLE NO. <u>70</u></p> |
|--|--|--|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE 1/3/72
 HOLE NO. 70A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 6.7

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>0</u> Hours 1:00 1/3/72 At <u>20' Casing</u> after _____ Hours | Rods-"AW" Type <u>BW</u> CASING <u>S/S</u> SAMPLER _____ CORE BAR. _____ Size I.D. <u>2 1/2"</u> <u>1 3/8"</u> Hammer Wt. <u>300#</u> <u>140#</u> BIT _____ Hammer Fall <u>24"</u> <u>30"</u> | Date _____ Time _____ START <u>1/3/72</u> _____ a.m. COMPLETE <u>1/3/72</u> _____ p.m. TOTAL HRS. _____ BORING FOREMAN <u>Quagliaroli</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| 4 | | | | | | | | | Black Oily SAND, Silt, Gravel Cinders, Fill | | | | |
| 6 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 4 | | 10'-11'6" | D | 4 | 1 | 2 | Wet Loose | 13' | | 1 | 18' | 16' | |
| 5 | | | | | | | | | | | | | |
| 4 | | 12'-13' | D | 2 | 1 | | | | | 2 | 12' | 10' | |
| 3 | | 13'-14' | D | 1 | 2 | | Wet Loose | 15' | Black PEAT & Oily Fine Sand | 2A | 12' | 9' | |
| 3 | | | | | | | | | | | | | |
| 4 | | 15'-16'6" | D | 1 | 1 | 1 | Wet Soft | 17' | Black Gray Org. SILT | 3 | 18' | 17' | |
| 5 | | | | | | | | | | | | | |
| 5 | | 17'-19' | Push 2" Shelby | | | | | | Gray Fine to Coarse SAND, Some Org. Silt & Fine to Med. Gravel | 4 | 24" | 9" | |
| 7 | | | | | | | | | | | | | |
| 13 | | | | | | | | 20' | | | | | |
| 8 | | 20'-21'6" | D | 9 | 5 | 8 | Wet M.D. | | Black Gray Fine to Coarse Oily SAND, Some Fine to Coarse Gravel, & org. Silt | 5 | 18' | 14' | |
| 14 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | |
| 13 | | | | | | | | 25' | | | | | |
| 9 | | 25'-26'6" | D | 7 | 5 | 5 | Wet Loose | | Black Gray Oily Fine to Coarse SAND, Some Fine to Coarse Gravel, Org. Silt Possible Fill | 6 | 18' | 6' | |
| 14 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | |
| 22 | | | | | | | M.D. | | | | | | |
| | | 30'-31'6" | D | 13 | 13 | 12 | Wet | 31'6" | | | 7 | 18' | 16' |
| | | | | | | | | | Bottom of Boring at 31'6" | | | | |
| | | | | | | | | | NOTE: 17'-19' Push Shelby Sand & Gravel in Tube Put in Jar(S-4) | | | | |

| | | | | |
|--|---|--|---|---|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>31'6</u> Rock Coring _____ Samples <u>7</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | | | | HOLE NO. _____ 70A |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 12/29/71
 HOLE NO. 71
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 6.6

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| | | | | |
|---|---|---|---------------------------|--|
| GROUND WATER OBSERVATIONS At <u>18'7"</u> after <u>1/2</u> Hours At _____ after _____ Hours | Rods - "AW" CASING Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ BIT | Date <u>12/29/71</u> Time _____ a.m. START <u>12/29/71</u> p.m. COMPLETE <u>12/30/71</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>Gomes</u> INSPECTOR _____ SOILS ENGR. _____ |
|---|---|---|---------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|----------|--------|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 1 | | | | | | | | | Probed to 5' No Samples Required | | | |
| 2 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 9 | | | | | | | | 5' | | | | |
| 4 | | 5'-6'6" | D | 2 | 3 | 1 | Soft | | Dark Brown Fine to Coarse SAND, Trace Fine Gravel, Cinders, Fill | 1 | 18'7" | |
| 4 | | | | | | | | 8' | | | | |
| 12 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 11 | | 10'-11'6" | D | 12 | 23 | 11 | Moist M.D. | | Gray Fine Silty SAND, Little Fine Gravel, (Fuel Odor Noted) Fill | 2 | 18'10" | |
| 5 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 8 | | | | | | | | 14' | | | | |
| 6 | | | | | | | | | | | | |
| 2 | | 15'-16'6" | D | 4 | 3 | 3 | Moist Soft | | Gray Fine Silty SAND, Trace Fine Gravel, Fill | 3 | 18'11" | |
| 7 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | | 20' | | | | |
| 1 | | 20'6"-22'6" | | | | | | | Org. S-1 20'6"-22'6" Pressed 24"-Rec 100% | SHELBY 2 | | |
| 1 | | | | | | | | 22' | | | | |
| 3 | | 22'6"-24'6" | | | | | | | 22'6"-24'6" Missed | | | |
| 2 | | | | | | | | | | | | |
| 1 | | 24'6"-27' | | | | | | 24'6" | | | | |
| 1 | | | | | | | | | S-2 24'6"-27' 100% Rec. | | | |
| 1 | | | | | | | | 27' | | | | |
| 2 | | | | | | | | | | | | |
| 2 | | | | | | | | | Org. Silt (Gray) | | | |
| 1 | | | | | | | | | | | | |
| 7 | | 30'-31'6" | D | 1 | 1 | 2 | Moist Soft | | | 4 | 18' - | |
| 9 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 17 | | | | | | | | 35' | | | | |
| 14 | | 35'-37' | | | | | | | S-3 35'-37' 100% Rec. | | | |
| 15 | | | | | | | | 37' | | | | |
| 15 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff | SUMMARY: Earth Boring <u>66'6"</u> Rock Coring _____ Samples <u>11</u> HOLE NO. _____ |
|---|---|---|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 71

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | BIT _____ | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING: _____

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 17 | | 40'-41'6" | D | 1 | 1 | 3 | Moist Soft | | Gray Org. SILT | 5 | 18' | 9" |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 50 | | 46'-46'9" | | | | | | | Pressed 2½" Shebly 9" Rec. Put Sample in Jar | 6 | 9" | 9" |
| 68 | | | | | | | | 46'8" | | | | |
| 28 | | 46'9"-48'4" | D | 4 | 6 | 6 | Moist V.D. | 49' | Black Silty Med. to Fine Sand, wood Fibrous | 7 | 18' | - |
| 26 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 60 | | 50'-51'6" | D | 16 | 31 | 26 | | | Gray Brown Fine to Coarse SAND, Fine to Med. Gravel, Little Silt | 8 | 18' | 9" |
| 75 | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 57 | | 55'-56'6" | D | 16 | 12 | 10 | | | | 9 | 18' | 11" |
| 31 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 60 | | 60'-61'6" | D | 26 | 21 | 19 | | | | 10 | 18' | 14" |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| | | 65'-66'6" | D | 18 | 15 | 16 | | 66'6" | | 11 | 18' | - |
| | | | | | | | | | Bottom of Boring at 66'6" | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type

D=Dry C=Cored W=Washed

UP=Undisturbed Piston

TP=Test Pit A=Auger V=Vane Test

UT=Undisturbed Thinwall

Proportions Used

trace 0 to 10%

little 10 to 20%

some 20 to 35%

and 35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density Cohesive Consistency

0-10 Loose 0-4 Soft 30+ Hard

10-30 Med. Dense 4-8 M/Stiff

30-50 Dense 8-15 Stiff

50+ Very Dense 15-30 V-Stiff

SUMMARY:

Earth Boring _____

Rock Coring _____

Samples _____

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

SHEET 1 OF 3
 DATE 12/31/71
 HOLE NO. 72
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.5

| | | | | |
|--|--|---|--|--|
| GROUND WATER OBSERVATIONS At <u>12'9"</u> after _____ Hours At _____ after _____ Hours | Rods-"AW" Type _____ Size I.D. <u>4"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> BIT _____ <u>30"</u> | CORE BAR. _____ _____ _____ _____ | Date _____ Time _____ START <u>12/31/71</u> o.m. COMPLETE <u>1/4/72</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>Gomes</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____ |
|--|--|---|--|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | | | | 13 | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 66 | | 5'-6'6" | D | 2 | 2 | 1 | Moist Loose | | Dark Gray Fine to Coarse SAND & Gravel, Ashes, Cinders (Oil Soaked), Fill | 1 | 18' | 12" |
| 53 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 29 | | 10'-11'6" | D | 4 | 4 | 7 | " " | | | 2 | 18' | 9" |
| 31 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 10 | | 15'-16'6" | D | 3 | 3 | 2 | " " | | | 3 | 18' | 10" |
| 28 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 18 | | | | | | | | 18'6" | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | 20'-21'6" | D | 14 | 5 | 4 | Moist Loose | 2" S-1 | Gray Org. SILT (No Rec. W/S/S) 22' - 24'6" - 30" Press Rec. 26" | | | |
| 8 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | |
| 14 | | | | | | | | 3" U.P. | -1 25' - 27' - 24" Press Rec. 21 1/2" | | | |
| 23 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 14 | | 27'-28'6" | D | 1 | 1 | 2 | Moist Soft | 3" U.P. | Gray Org. SILT -2 31' - 33' - 24" Press Rec. 24" | 4 | 18' | 18" |
| 16 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 29 | | 33'-34'6" | D Press | | | | | | | 5 | 18' | 18" |
| 21 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 29 | | 38'-40' | | | | | | 2" S-2 | 38' - 40' - 24" Press 100% Rec. | | | |
| 21 | | | | | | | | | | | | |

| | | |
|--|---|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff |
| | | SUMMARY: Earth Boring <u>90'</u> Rock Coring _____ Samples <u>15</u> HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____
 HOLE NO. 72
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. _____ |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 2½" | 23 | 40'-41'5" | D | Press | | | Moist Soft | | Gray Org. SILT & Shells | 6 | 18 | 18" |
| | 27 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 78 | | | | | | | | | | | |
| 4" | 108 | 45'-47' | UP #3 | | | | | 3" 47' | Pressed 24" From 45' -47' 100% Rec. | | | |
| | 124 | | | | | | | | | | | |
| | 134 | 47'-48'6" | D | 2 | 5 | 5 | Moist Stiff | | Dark Gray Peaty Org. SILT, Trace Fine SAND | 7 | 18 | 12" |
| | 136 | | | | | | | | | | | |
| | 131 | | | | | | | | | | | |
| 2½" | Red | 50'-51'6" | D | 5 | 8 | 8 | Moist V. Stiff | S-3 53' | Press From 52'-53' No Rec. | 8 | 18 | 13" |
| | Wash | 52'-53' | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 22 | 53'-54'6" | D | 18 | 24 | 29 | Moist M.D. | | Gray Fine to Coarse SAND, & Fine to Coarse Gravel, Some Silt | 9 | 18 | 9" |
| | 39 | | | | | | | | | | | |
| 2½" | 9 | | | | | | | | | | | |
| | 11 | | | | | | | | | | | |
| | 13 | | | | | | | 59' | | | | |
| | 13 | | | | | | | | | | | |
| | 12 | | | | | | | | | | | |
| 2½" | 13 | 60'-61'6" | D | 9 | 11 | 13 | Moist M.D. | | Gray Fine to Coarse SAND, Little Fine Gravel, Trace Silt | 10 | 18 | - |
| | 16 | | | | | | | | | | | |
| | 19 | | | | | | | | | | | |
| | 23 | | | | | | | 64' | | | | |
| | 6 | 64'-65' | D | 2 | 1 | | Moist Loose | 65' | Gray F-C SAND, & Org. Silt, Trace Fine Gravel | 11 | 12 | 7" |
| 2½" | 7 | | | | | | | | | | | |
| | 6 | 65'-66' | D | 1 | 1 | | Moist Soft | 68' | Dark Gray Org. SILT, Trace Peat | 11A | 12 | 9" |
| | 5 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| 2½" | 17 | 69'-71' | D | 18 | 18 | 19 | Moist Dense | 74' | Gray Fine to Med. SAND, & Silt, Trace Fine to Coarse Gravel | 12 | 24 | 10" |
| | 35 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| | 38 | | | | | | | | | | | |
| | 45 | | | | | | | | | | | |
| 2½" | 34 | 74'-75'6" | D | 9 | 6 | 4 | Moist Loose | | Gray Fine to Coarse SAND, & Silt, Some Fine to Med. Gravel | 13 | 18 | 9" |
| | 33 | | | | | | | | | | | |
| | 39 | | | | | | | | | | | |
| | 39 | | | | | | | | | | | |
| | 45 | 79'-81' | D | 24 | 24 | 21/26 | | | No Rec. | | | |

| | | | | | | | |
|---------------------------------|------------------|---|------------|----------------------|---------|----------------------|--|
| GROUND SURFACE TO _____ | | USED _____ | | "CASING: THEN _____ | | SUMMARY: | |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | Cohesionless Density | | Cohesive Consistency | |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 | Loose | 0-4 | Soft | 30 + Hard | |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 | Med. Dense | 4-8 | M/Stiff | | |
| TP=Test Pit A=Auger V=Vone Test | some 20 to 35% | 30-50 | Dense | 8-15 | Stiff | | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ | Very Dense | 15-30 | V-Stiff | | |
| | | | | | | Earth Boring _____ | |
| | | | | | | Rock Coring _____ | |
| | | | | | | Samples _____ | |
| | | | | | | HOLE NO. _____ | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 73-A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.0

TO Haley & Aldrich, Inc. ADDRESS CAMBRIDGE, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| | | | | | |
|---|---|--|-----------------------------|-----------------------|---|
| GROUND WATER OBSERVATIONS At <u>18'</u> after <u>0</u> Hours <u>12/31/71 - 9:00</u> At _____ after _____ Hours | Rods - "AW" CASING Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ | START <u>12/29/71</u> a.m. COMPLETE <u>12/29/71</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>Quagliaroli</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____ |
|---|---|--|-----------------------------|-----------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|--|---|---------|-----|----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Re |
| 6 | | | | | | | | Brown Fine to Coarse SAND & GRAVEL(Fill) | | | | |
| 8 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 6 | | 15'-15'6" | D | 5 | | | Loose | 15'6" | | 1 | 6" | 5" |
| 4 | | 15'6"-16'6" | D | 2 | 2 | | Wet | | Gray Org. SILT, Trace Shells Trace Fine SAND | 1A | 12" | 1" |
| 2 | | 17'-19' | Press 2" | | | | | | | UT-124' | | 22 |
| 2 | | | | | | | | | | | | |
| 3 | | 19'-21' | Press 2" | | | | | | | UT-224' | | 20 |
| 3 | | 21'-22'6" | D | 4 | 2 | 2 | Wet Soft | | | 2 | 18" | 16 |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | 30' | | | | |
| 7 | | 30'6"-22'6" | Press 2" | | | | | | Gray Fine to Coarse SAND, Trace Silt, Little Fine Gravel, Little Silt | - | 24" | 0 |
| 12 | | 32'6"-34'6" | Press 2" | | | | | | | - | 24" | 0 |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 13 | | 24'6"-36' | D | 6 | 9 | 8 | Wet M.D. | | | 3 | 18" | 15 |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 21 | | | | | | | Wet | 39' | Gray Org. Silt, Trace Wood | | | |
| 23 | | 40'-41'6" | D | 2 | 3 | 4 | Loose | | Mixed With The Sand | 4 | 18" | 14 |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" Fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 71'
 Rock Coring _____
 Samples 8

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 73A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. 71-508
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|--|---|
| <p>GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>SAMPLER _____</p> <p>CORE BAR _____</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Foll _____</p> | <p>Date _____ Time _____</p> <p>START <u>12/29/71</u> a.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|---|--|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|-----------------|-------------------------|------|-------|------------------------------|---------------------|---|---------|-----|-----|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec |
| 16 | | | | | | | | | | | | |
| 20 | | 42'-43'9" | Press 2" Shelby | | | | | 42' | Gray Org. SILT, Fibrous, TR. Wood, Mixed with F-C SAND | UT-321" | 8" | |
| 26 | | | | | | | | | Gray Fine to Coarse SAND, Little Fine to Med. Gravel, Trace Silt | | | |
| 30 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 36 | | | | | | | | 48' | | | | |
| 40 | | | | | | | | | Gray Brown Fine to Coarse SAND, Some Silt, Little Fine To Coarse Gravel, Note: Tube Taken at 42'-43'9"; Sand & Gravel, Put Rec. in Jar | | | |
| 41 | | | | | | | | | | | | |
| 16 | | 50'-51'6" | D | 7 | 8 | 10 | Wet M.D. | | | | | |
| 26 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 26 | | | | | | | | | Gray Brown Fine to Coarse SAND, Some Fine to Coarse Gravel, Little Silt Note: 65'-66'6" Recovery on Second Attempt | | | |
| 24 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 22 | | 60'-61'6" | D | 17 | 9 | 10 | Wet M.D. | | | 6 | 18" | 13" |
| 26 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 22 | | 65'-66'6" | D | 12 | 10 | 7 | " " | | | 7 | 18" | 3" |
| 46 | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | |
| 79 | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | |
| | | 70'-71'6" | D | 16 | 12 | 10 | " " | 71'6" | | 8 | 18" | 14" |
| | | | | | | | | | Bottom of Boring at 71'6" | | | |

| | | | | |
|---|---|--|---|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ "CASING: THEN _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. _____ |
|---|---|--|---|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE 12/28/71

HOLE NO. 74

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.0

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Providence Gas Co.

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. _____

SAMPLES SENT TO "

OUR JOB NO. 71-508

| | | | | | | |
|---------------------------|------------------------|------------------------|---------------|-----------|-----------------------------|------------|
| GROUND WATER OBSERVATIONS | | Rods-"AW" CASING | SAMPLER | CORE BAR. | Date | Time |
| At <u>20'8"</u> | after <u>1/2</u> Hours | Type _____ | <u>S/S</u> | _____ | START <u>12/28/71</u> | _____ o.r. |
| At _____ | after _____ Hours | Size I.D. <u>BW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>12/29/71</u> | _____ o.r. |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | _____ | BORING FOREMAN <u>Gomes</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|-------------|------------------------------|---------------------|---|--------|-----|------|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| 2 | | | | | | | | 5' | No Sample to 5' | | | | |
| 6 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 8 | | | | | | | | 15' | Dark Gray Fine to Coarse SAND, Gravel, Ash & Cinders (Oil Soaked), Fill | 1 | 18' | 7' | |
| 4 | 5'-6'6" | D | 2 | 2 | 3 | Wet Loose | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 4 | | | | | | | | 21' | Gray Org. SILT, 2" S-Tube 17'-19' No Rec. 2" S-Tube 19'-21' | 2 | 18' | 9" | |
| 3 | 10'-11'6" | D | 3 | 3 | 5 | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 8 | | | | | | | | 23' | Gray Fine to Med. SAND, Some Silt, Trace Fine Gravel | 3 | 18' | 12' | |
| 2 | 15'-16'6" | D | 1 | 1 | 1 | Moist Soft | | | | | | | |
| 2 | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | |
| 2 | | | | | | | | 32'6" | Gray Fine to Coarse SAND, Some Fine Gravel, Little Silt | 4 | 18' | 12' | |
| 2 | 21'-22'6" | D | 4 | 5 | 6 | Moist M.D. | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 5 | 23'-24'6" | D | 6 | 20 | 24 | Moist M.D. | | | | | | | |
| 17 | | | | | | | | 32'6" | Missed Sample | 5 | 18' | 9" | |
| 8 | 25'-26'6" | D | 12 | 9 | 14 | " " | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | |
| 43 | | | | | | | | 32'6" | Gray Brown Fine to Med. SAND, Little Fine Gravel, Silt | 6 | 18' | 11" | |
| 37 | | | | | | | | | | | | | |
| 19 | 30'-31'6" | D | 36 | 24 | 32 | | | | | | | | |
| 26 | | | | | | | | | | | | | |
| 21 | | | | | | | | 32'6" | Missed Sample | 7 | 18' | 1' | |
| 8 | | | | | | Moist Loose | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 6 | 35'-36'6" | D | 5 | 8 | 9 | | | | | | | | |
| 12 | | | | | | | | 32'6" | Missed Sample | 8 | 18' | 11" | |
| 20 | 36'6"-38' | D | 7 | 9 | 8 | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 46
 Rock Coring _____
 Samples 10

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, INC. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-508

SHEET 1 OF 2
 DATE 1/13/72
 HOLE NO. 76
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -3.6' (MHW)

| | | | | |
|---|---|---|---------------------------|--|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods - "AW" CASING Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ BIT | Date _____ Time _____ START <u>1/12/72</u> a.m. COMPLETE <u>1/13/72</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>AL Whitaker</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____ |
|---|---|---|---------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | PUSH | | | | | | | | | | | |
| | to | | | | | | | 2' | Black Org. SILT, with Layers of Coarse to Fine Sand | | | |
| | 10' | 0'-5' | D | PUSH | | | | | Black Org. SILT | 1 | 60" | 24" |
| | | 7'-9' | ST | PUSH | | | | | | ST1 | 24" | 16" |
| | | | | | | | | 10' | | | | |
| | 2' | 9'-11' | D | PUSH | PUSH | 15 | | | Black Fine to Coarse SAND, Trace Gravel, Little Silt | 2 | 24" | 24" |
| | 9 | | | | | 17 | | | | 2A | | |
| | 14 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 23 | 15'-17' | D | | 8 | 10 | 15 | 15' | | 3 | 24" | 16" |
| | 7 | | | | | 17 | | | Gray Brown SILT, Little Fine SAND | | | |
| | 13 | | | | | | | | | | | |
| | 18 | | | | | | | 18' | | | | |
| | 28 | | | | | | | | | | | |
| | 31 | 20'-22' | D | | 15 | 13 | 17 | | Gray Brown Fine to Coarse SAND, Trace Gravel, & Silt | 4 | 24" | 20" |
| | 18 | | | | | 17 | | | | | | |
| | 30 | | | | | | | | | | | |
| | 27 | | | | | | | | | | | |
| | 29 | | | | | | | | | | | |
| | 25 | 25'-27' | D | | 15 | 15 | 17 | 25' | | 5 | 24" | 20" |
| | 31 | | | | | 20 | | | Gray Brown SILT, Trace Fine Sand | | | |
| | 40 | | | | | | | | | | | |
| | 33 | | | | | | | 28' | | | | |
| | 33 | | | | | | | | | | | |
| | 37 | 30'-32' | D | | 18 | 18 | 25 | | Brown Fine to Coarse Gravel & Sand, Trace Silt | 6 | 24" | 8" |
| | 24 | | | | | 34 | | | | | | |
| | 29 | | | | | | | | | | | |
| | 57 | | | | | | | | | | | |
| | 49 | | | | | | | | | | | |
| | 52 | 35'-37' | D | | 17 | 17 | 21 | 35' | | 7 | 24" | 15" |
| | 17 | | | | | 20 | | | Brown SILT with Sand Layers | | | |
| | 18 | | | | | | | 37' | | | | |
| | 26 | | | | | | | | Gray Fine SAND | | | |
| | 35 | | | | | | | | | | | |
| | 43 | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 52'
 Rock Coring _____
 Samples 10

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 76

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 26 | | 40'-42' | D | 2 | 7 | 10 | | 41.5' | Gray Fine SAND | 8 | 24" | 20" |
| 25 | | | | 14 | | | | | Brown Fine SAND, Trace Silt | | | |
| 33 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 58 | | 45'-47' | D | 11 | 11 | 12 | | 45' | | 9 | 24" | 18" |
| 21 | | | | 12 | | | | | Gray Silty Fine SAND | | | |
| 30 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 49 | | 50'-52' | D | 17 | 17 | 21 | | 50' | | 10 | 24" | 20" |
| | | | | 20 | | | | | Gray Silt, Trace Layers of Clay | | | |
| | | | | | | | | 52' | Bottom of Boring at 52' | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type

D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used

trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency

0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:

Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 1/12/72
 HOLE NO. 77
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -4.8(MHW)

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-508

| | | | | | |
|---|--|---------------------|---|------------------|---|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods-"AW" Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING <u>BW</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. BIT | Date _____ Time _____ START <u>1/11/72</u> _____ a.m. COMPLETE <u>1/12/72</u> _____ p.m. TOTAL HRS. _____ BORING FOREMAN <u>Al Whitake</u> INSPECTOR <u>K. Varnum</u> SOILS ENGR. _____ |
|---|--|---------------------|---|------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | PUSH | | | | | | | | | | | |
| | to 17' | 0'-2' | D | PUSH | | | | | Black Sandy Org. SILT | 1 | 24" | 11" |
| | | 2'-4' | UP | PUSH | | | | | | UP1 | 24" | 24' |
| | | 4'-8' | D | PUSH | | | | | | 2 | 48" | 14" |
| | | | | | | | | | | | | |
| | | 11'-13' | D | PUSH | | | | | | 3 | 24" | 20" |
| | | | | | | | | 14.5' | | | | |
| | | 16'-18' | ST | PUSH | | | | | Gray Org. SILT | ST1 | 24" | 18" |
| | 1 | 18'-20' | D | PUSH | | | | | | 4 | 24" | 14' |
| | 2 | | | | | | | | | | | |
| | 1 | 21'-23' | UP | PUSH | | | | | | UP2 | 24" | 20' |
| | 4 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | 4 | 23'-25' | D | PUSH | | | | | | 5 | 24" | 18" |
| | 4 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 4 | 29'-31' | UP | PRESS | | | | | | UP3 | 24" | 20' |
| | 7 | | | | | | | | | | | |
| | 12 | 31'-33' | D | PRESS | | | | 32.8' | | 6 | 24" | 18" |
| | 12 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 14 | | | | | | | 35' | Black Fine to Med. SAND, Little Silt | | | |
| | 7 | 36'-38' | D | 1 1 1 | | | | | Gray Org. Silt | 7 | 24" | 14" |
| | 6 | | | 1 | | | | | | | | |
| | 8 | | | Sample in Jar | | | | | | | | |
| | 7 | 39'-41' | ST | PUSH | | | | 40' | | 8 | 24" | 14" |
| | 11 | | | 7 | | | | | Dark Brown F-C SAND, Little Silt | | | |

| | | | |
|--|--|--|---|
| GROUND SURFACE TO _____ USED _____ CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>62'</u> Rock Coring _____ Samples <u>12</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwell | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 30+ Hard 30+ Hard | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 77
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|----------------------------|-------------------|--------|---------|-----------|----------------------|------------|
| At _____ after _____ Hours | Type _____ | _____ | _____ | _____ | START _____ | g.m. _____ |
| At _____ after _____ Hours | Size I.D. _____ | _____ | _____ | _____ | COMPLETE _____ | p.m. _____ |
| | Hammer Wt. _____ | _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | Hammer Fall _____ | _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|-------|------------------------------|---------------------|---|--------|-----|------|-----|
| | | | | From 0-6 | To 6-12 | 12-18 | | | | No. | Pen | Rec. | |
| 47 | | | | | | | | 42' | Dark Brown Fine to Coarse Sand, Little Silt | | | | |
| 33 | | | | | | | | | Gray Coarse to Fine GRAVEL & SAND, Trace Silt | | | | |
| 47 | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | |
| 61 | 44'-46' | D | | 14 | 19 | 20 | | | | | 9 | 24" | 8" |
| 70 | | | | 24 | | | | | | | | | |
| 82 | | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | |
| 50 | 49'-51' | D | | 12 | 15 | 15 | | | | | 10 | 24" | 10" |
| 100 | | | | 18 | | | | | | | | | |
| 140 | | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | | |
| 117 | | | | | | | | 55' | | | | | |
| 72 | 55'-57' | D | | 15 | 12 | 12 | | | Gray Fine to Coarse SAND, Little Silt | 11 | 24" | 10" | |
| 98 | | | | 11 | | | | | | | | | |
| 140 | | | | | | | | | | | | | |
| 260 | | | | | | | | | | | | | |
| 120 | | | | | | | | | | | | | |
| | 60'-62' | D | | 14 | 15 | 12 | | | | 12 | 24" | 12" | |
| | | | | 16 | | | | 62' | | | | | |
| | | | | | | | | | Bottom of Boring at 62' | | | | |

| | | | |
|--|---|---|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | HOLE NO. <u>77</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE 1/12/72
 HOLE NO. 78
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -5.3 (MHW)

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | Rods - "AW" Type | CASING Size I.D. | SAMPLER S/S | CORE BAR. BIT | Date | Time |
|---------------------------|-------------------|---------------------|---------------------|----------------|-----------------------------------|-------|--------|
| At _____ | after _____ Hours | | | | | BW | 1 3/8" |
| At _____ | after _____ Hours | 300# | 140# | 1/11/72 | _____ | _____ | _____ |
| | | Hammer Wt. | 24" | 30" | START | | |
| | | Hammer Fall | | | COMPLETE | | |
| | | | | | TOTAL HRS. | | |
| | | | | | BORING FOREMAN <u>Al Whitaker</u> | | |
| | | | | | INSPECTOR <u>R. Varnum</u> | | |
| | | | | | SOILS ENGR. _____ | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| | PUSH | | | | | | | | | | | |
| | to 0'-5' | D | PUSH | | | | | Black SILT, Trace Org. Material | 1 | 60" | 24" | |
| | 16' | | | | | | | 4' | | | | |
| | | 5'-7' | D | PUSH | | | | Gray Org. SILT | 2 | 24" | 19" | |
| | | 8'-10' | ST | PUSH | | | | | St | 124" | 14" | |
| | | 12'-14' | UP | PUSH | | | | | UP1 | 24" | 21" | |
| | | 14'-16' | D | PUSH | | | | | 3 | 24" | 20" | |
| | 1 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| | 1 | 20'-22' | ST | PUSH | | | | | ST2 | 24" | 19" | |
| | 1 | | | | | | | | | | | |
| | 2 | 22'-24' | D | PUSH | | | | | 4 | 24" | 18" | |
| | 3 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 4 | 27'-29' | UP | PUSH | | | | | UP2 | 20" | 18" | |
| | 4 | 29'-31' | D | PUSH | | | | | 5 | 24" | 18" | |
| | 6 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 8 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 8 | 35'-37' | UP | PUSH | | | | | UP3 | 24" | 17" | |
| | 16 | | | | | | | | | | | |
| | 20 | | | | | | | 37' | | | | |
| | 20 | 37'-39' | D | 2 | 6 | 6 | | | 6 | 24" | 13" | |
| | 25 | | | | | | | | | | | |
| | 21 | | | | | | | | | | | |

| | | | | | | | |
|---------------------------------|------------------|---|----------------------|----------------------|----------------|----------|--|
| GROUND SURFACE TO _____ | | USED _____ | | "CASING: THEN _____ | | SUMMARY: | |
| Sample Type | Proportions Used | 140lb Wt. x 30" tall on 2" O.D. Sampler | Cohesionless Density | Cohesive Consistency | Earth Boring | 59' | |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 Loose | 0-4 Soft | 30 + Hard | Rock Coring | _____ | |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | 4-8 M/Stiff | | Samples | 11 | |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | 8-15 Stiff | | HOLE NO. _____ | | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | 15-30 V-Stiff | | 70 | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 78

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| | | |
|--|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR.</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date _____ Time _____</p> <p>START _____ o.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 17 | | 41'-42.5' | D | 2 | 2 | 5 | | | Gray Stiff Org. SILT, with Fine Sand Layers | 7 | 18" | 18" |
| 16 | | 42.5-43' | D | 7 | | | | 42.5' | | 7A | 6" | 5" |
| 26 | | | | | | | | 43' | Brown Sandy PEAT | | | |
| 45 | | | | | | | | | Gray Fine to Med. SAND, with 1/2" Layers of Silt | 8 | 24" | 20" |
| 83 | | 45'-47' | D | 14 | 15 | 15 | | 47' | | | | |
| 81 | | | | 18 | | | | | Gray Fine SAND, Little Silt | | | |
| 63 | | | | | | | | | | | | |
| 54 | | | | | | | | | Bottom of Boring at 59' | | | |
| 55 | | | | | | | | | | | | |
| 57 | | 50'-52' | D | 11 | 7 | 9 | | | | 9 | 24" | 18" |
| 30 | | | | 10 | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 42 | | 55'-57' | D | 9 | 10 | 10 | | | | 10 | 24" | 20" |
| | | | | 10 | | | | | | | | |
| | | 57'-59' | D | 11 | 10 | 10 | | | | 11 | 24" | 18" |
| | | | | 13 | | | | | | | | |
| | | | | | | | | 59' | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

| | | | | |
|--|---|--|---|---|
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <p>Cohesionless Density</p> <p>0-10 Loose</p> <p>10-30 Med. Dense</p> <p>30-50 Dense</p> <p>50+ Very Dense</p> | <p>Cohesive Consistency</p> <p>0-4 Soft 30+ Hard</p> <p>4-8 M/Stiff</p> <p>8-15 Stiff</p> <p>15-30 V-Stiff</p> | <p>SUMMARY:</p> <p>Earth Boring _____</p> <p>Rock Coring _____</p> <p>Samples _____</p> <p style="text-align: right;">HOLE NO. _____</p> |
|--|---|--|---|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

SHEET 1 OF 2
 DATE 1/7/72
 HOLE NO. 79
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -6.0' (MHW)

| | | | | | |
|---|--|-----------------------------------|--|------------------------------------|---|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>4"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ _____ _____ | SAMPLER <u>S/S</u> <u>1' 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ _____ BIT | Date _____ Time _____ START <u>1/4/72</u> <u>_____</u> <u>_____</u> a.m. COMPLETE <u>1/6/72</u> <u>_____</u> <u>_____</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>Whitaker</u> INSPECTOR <u>R. Varham</u> SOILS ENGR. _____ |
|---|--|-----------------------------------|--|------------------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strota Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|------|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| | P | | | | | | | | Soft Black SILT, Trace Fine Sand | | | |
| | U | 0'-3' | D | PUSH | | | | | | 1 | 36' | 18" |
| | S | | | | | | | | | | | |
| | H | | | | | | | | | | | |
| | 1 | 5'-7' | D | PUSH | | | | | | 2 | 24' | 18" |
| | 1 | 7'-9.5' | ST | PUSH | | | 7' | | | ST1 | 30' | 13" |
| | 1 | | | | | | | | Gray Org. SILT | | | |
| | 1 | | | | | | | | | | | |
| | 1 | 10'-12' | UP | PUSH | | | | | | UP1 | 24' | 24" |
| | 1 | 12'-13.5' | D | PUSH | | | | | | 3 | 18' | 16" |
| | 1 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| | 2 | 16'-18' | UP | PUSH | | | | | | UP2 | 24' | 15" |
| | 2 | | | | | | | | | | | |
| | 3 | 18'-19.5' | D | PUSH | | | | | | 4 | 18' | 18" |
| | 4 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 5 | 23'-25' | ST | PUSH | | | | | | ST2 | 24' | 24" |
| | 5 | | | | | | | | | | | |
| | 6 | 25'-26.5' | D | PUSH | | | | | 5 | 18' | 12" | |
| | 7 | | | | | | | | | | | |
| | 7 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 6 | 31'-33' | UP | PUSH | | | | | UP3 | 24' | 24" | |
| | 9 | | | | | | | | | | | |
| | 10 | 33'-34' | D | PUSH | | | | | 6 | 12' | 12" | |
| | 10 | 34'-34.5' | D | PUSH | | | | | 6A | 6" | 6" | |
| | 12 | | | | | | | | | | | |
| | 12 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | |
| | 33 | 38'-40' | ST | PRESS | | | 39' | | ST3 | 24' | 24" | |
| | 64 | | | | | | | | | | | |

| | | | |
|--|--|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used: trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| TOWN PRESS - EAST PROV. | | | SUMMARY: Earth Boring <u>55'</u> Rock Coring _____ Samples <u>10</u> HOLE NO. _____ |

| RESOURCE CONTROLS | | | | | TEST BORING LOG | | | | | | | | | | | |
|--|--------------------------------|--|----------------|--------------------|---|---|---|-------------------------------------|-------|-------------|------------|--------|-------------|----------|--------------|--------|
| PROJECT: Providence Gas Company PROJECT NO.: A2000 LOCATION: 642 Allens Avenue, Providence, R.I. DRILLING CO.: American Drilling, Inc. DRILLED BY: Jim Campbell INSPECTED BY: Daniel Lanier | | | | | BORING NO. RCA-3 PAGE 1 OF 1 DATE STARTED: 9/8/94 DATE FINISHED: 9/9/94 SURFACE ELEVATION: | | | | | | | | | | | |
| GROUNDWATER OBSERVATIONS | | | | | | | | | | | | | | | | |
| | | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">DEPTH</th> <th>STABILIZATION TIME</th> </tr> <tr> <td></td> <td style="text-align: center;">N/A</td> </tr> </table> | | | DEPTH | STABILIZATION TIME | | N/A | | | | | | | | |
| DEPTH | STABILIZATION TIME | | | | | | | | | | | | | | | |
| | N/A | | | | | | | | | | | | | | | |
| | | | | | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">CASING</th> <th>SAMPLER</th> </tr> <tr> <td>TYPE:</td> <td>Split Spoon</td> </tr> <tr> <td>SIZE I.D.:</td> <td>1-3/8"</td> </tr> <tr> <td>HAMMER WT.:</td> <td>140 lbs.</td> </tr> <tr> <td>HAMMER FALL:</td> <td>30 in.</td> </tr> </table> | | CASING | SAMPLER | TYPE: | Split Spoon | SIZE I.D.: | 1-3/8" | HAMMER WT.: | 140 lbs. | HAMMER FALL: | 30 in. |
| CASING | SAMPLER | | | | | | | | | | | | | | | |
| TYPE: | Split Spoon | | | | | | | | | | | | | | | |
| SIZE I.D.: | 1-3/8" | | | | | | | | | | | | | | | |
| HAMMER WT.: | 140 lbs. | | | | | | | | | | | | | | | |
| HAMMER FALL: | 30 in. | | | | | | | | | | | | | | | |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) SAND | FIELD TEST DATA PID - 10.2 eV (ppm) | | | | | | | | |
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | | | | | | | | | |
| 5' | 0-2 | SS-1 | 80% | 4-5-9-11 | | 5 | dry, black, sandy FILL, trace coal | 28.5 | | | | | | | | |
| | 2-4 | SS-2 | 25% | 8-5-5-8 | | | damp, brown, fine SAND, some med. sand | 8.4 | | | | | | | | |
| 10' | 4-6 | SS-3 | 75% | 5-6-5-3 | | moist, gray med. to fine SAND, trace coarse sand | 166 | | | | | | | | | |
| | 6-8 | SS-4 | 60% | 3-2-2-2 | | saturated, olive brown, med. to fine SAND, petroleum odor | 257 | | | | | | | | | |
| 15' | 8-10 | SS-5 | 100% | 1-11/2' | | SAME, with little silt, oily | 523 | | | | | | | | | |
| | 10-12 | SS-6 | 30% | 1-3-4-8 | | cohesive, black, fine grained matrix, tarry odor | 217 | | | | | | | | | |
| 20' | 12-14 | SS-7 | 90% | 4-8-11-11 | | saturated, dark olive, med. to fine SAND, little silt | 427 | | | | | | | | | |
| | 14-16 | SS-8 | 50% | 4-4-5-6 | | oily, coars to med. SAND, some fine sand & silt | 407 | | | | | | | | | |
| 25' | 16-18 | SS-9 | 70% | 5-5-3-3 | | olive, medium SAND, little fine sand & silt | 407 | | | | | | | | | |
| | 18-20 | SS-10 | 75% | 2-1-2-2 | | SAME | 68 | | | | | | | | | |
| 30' | 20-22 | SS-11 | 85% | 2-5-6-4 | | olive, SILT, trace medium to fine sand | | | | | | | | | | |
| | 22-24 | SS-12 | 90% | 2-3-9-8 | | dark gray, coarse to medium SAND, little silt | | | | | | | | | | |
| 30' | 24-26 | SS-13 | 100% | 2-8-10-13 | dark gray, medium to fine SAND & SILT | 59.9 | | | | | | | | | | |
| | 26-28 | SS-14 | 70% | 9-14-10-12 | dark olive, coarse to medium SAND & SILT trace gravel | 92 | | | | | | | | | | |
| Bottom of exploration at 28' 28' to 16' Grout | | | | | | | | | | | | | | | | |
| GENERAL REMARKS: 10' 0.020"-slot EFG screen 8-1/2" borehole HSA / boring #2 silica sand pack 2'-10" standpipe | | | | | | | | | | | | | | | | |

EOIPROV0003858


Destroyed As of
SEPT 2002

LNSG

| RESOURCE CONTROLS | | | | | TEST BORING LOG | | | | | | |
|--|--------------------------------|-------------|------|------------------|--|---------------------|--|--|---|--|--|
| PROJECT: Providence Gas Company PROJECT NO.: A2000 LOCATION: 642 Allens Avenue, Providence, R.I. DRILLING CO.: American Drilling, Inc. DRILLED BY: Jim Campbell INSPECTED BY: Daniel Lanier | | | | | BORING NO. RCA-4 PAGE 1 OF 1 DATE STARTED: 9/7/94 DATE FINISHED: 9/7/94 SURFACE ELEVATION: | | | | | | |
| GROUNDWATER OBSERVATIONS <table border="1"> <tr> <th>DEPTH</th> <th>STABILIZATION TIME</th> </tr> <tr> <td></td> <td>N/A</td> </tr> </table> | | | | | DEPTH | STABILIZATION TIME | | N/A | CASING SAMPLER TYPE: Split Spoon SIZE I.D.: 1-3/8" HAMMER WT.: 140 lbs. HAMMER FALL: 30 in. | | |
| DEPTH | STABILIZATION TIME | | | | | | | | | | |
| | N/A | | | | | | | | | | |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) coarse GRAVEL, brick and debris | FIELD TEST DATA PID - 10.2 eV (ppm) | | | |
| | 2 | SS-1 | NA | GRAB | | | dry, black, fine SAND, some medium sand (fill) | 45.3 | | | |
| 5' | 4-6 | SS-1 | 55% | 4-7-7-10 | | 5.5 | oily, black medium SAND and CLINKER damp, brown, fine SAND, little medium sand | 225 | | | |
| | 6-8 | SS-2 | 100% | 13-17-17-18 | | 7 | oily, black, medium SAND and CLINKER | 690 | | | |
| 10' | 8-10 | SS-3 | 10% | 2-2-2-3 | | | saturated, black, oily, med. SAND, some coarse | 1,690 | | | |
| | 10-12 | SS-4 | 20% | | | | saturated, black, fine SAND, some silt | 801 | | | |
| | 12-14 | SS-5 | 70% | 10-4-3-4 | | | saturated, oily, black, med. SAND, little fine | 1,292 | | | |
| 15' | 14-16 | SS-6 | 40% | 1-2-2-3 | | | saturated, black, med. SAND, trace silt | 851 | | | |
| | 16-18 | SS-7 | 45% | 4-2-2-1 | | | SAME, trace coarse sand | | | | |
| 20' | 18-20 | SS-8 | 100% | 1-1-1-1 | | 18.5 | 8A: SAME 8B: dark gray, CLAYEY, SILT interbedded with CLAYEY, SILT | 591 129 492 | | | |
| | 20-22 | SS-9 | 100% | weight of hammer | | | | | | | |
| | 22-24 | SS-10 | 100% | 1-2-2-1 | | | | | | | |
| 25' | 24-26 | SS-11 | 100% | 0-1-2-1 | | | dark, gray, CLAYEY, SILT SAME, trace medium to finesand oil smear in spoon | 205 117 | | | |
| 30' | | | | | | | Bottom of exploration at 26' 26' to 16' Grout | | | | |
| GENERAL REMARKS: 10' 0.020" slot EFG screen 8-1/2" borehole 2'-10" standpipe #2 silica sand pack threaded bottom plug with 8" sump | | | | | | | | | | | |

EOIPROV0003859

LNG

| RESOURCE CONTROLS | | | | | TEST BORING LOG | | | |
|--|--------------------------------|---|----------------|--------------------|--|---------------------|---|---|
| PROJECT: Providence Gas Company PROJECT NO.: A2000 LOCATION: 642 Allens Avenue, Providence, R.I. DRILLING CO.: American Drilling, Inc. DRILLED BY: Jim Campbell INSPECTED BY: Daniel Lanier | | | | | BORING NO. RCA-5 PAGE 1 OF 1 DATE STARTED: 9/7/94 DATE FINISHED: 9/7/94 SURFACE ELEVATION: | | | |
| GROUNDWATER OBSERVATIONS | | | | | CASING SAMPLER | | | |
| DEPTH | | STABILIZATION TIME | | | TYPE: SIZE I.D.: HAMMER WT.: HAMMER FALL: | | | |
| | | | | | | | | Split Spoon 1-3/8" 140 lbs. 30 in. |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) GRAVEL and DEBRIS | |
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | |
| 5' | 2 | S-1 | NA | GRAB |  | 5 | dry, black, medium to fine SAND, trace brick (fill) dry, black medium to fine SAND and ash fill moist, brown, medium to fine SAND trace coarse sand | 16 18 19 |
| | 4-6 | SS-1 | 40% | 3-4-5-3 | | | | |
| | 6-8 | SS-2 | 25% | 4-3-3-3 | | | | |
| 10' | 8-10 | SS-3 | 20% | 3-5-4-3 | | 15 | saturated, olive, medium to fine SAND, SAME silt saturated, medium to fine SAND and SILT trace coarse sand, oily SAME, with trace gravel | 70 129 77 |
| | 10-12 | SS-4 | 35% | 1-2-1-16 | | | | |
| | 12-14 | SS-5 | <5% | 3-7-6-3 | | | | |
| 15' | 14-16 | SS-6 | 100% | 5-5-4-4 | | 17.5 | black, oily, fill with CLINKER dark olive, CLAYEY SILT SAME | 440 125 121 |
| | 16-18 | SS-7 | 100% | 4-2-3-3 | | | | |
| 20' | 18-20 | SS-8 | 100% | 1-1-2-1 | Bottom of exploration at 20' | | | |
| | | | | | | | | |
| 25' | | | | | | | | |
| 30' | | | | | | | | |
| GENERAL REMARKS: | | 10' 0.020"-slot EFG screen 8-1/2" borehole 2'-10" standpipe #2 silica sand pack threaded bottom plug with 8" sump | | | | | | |

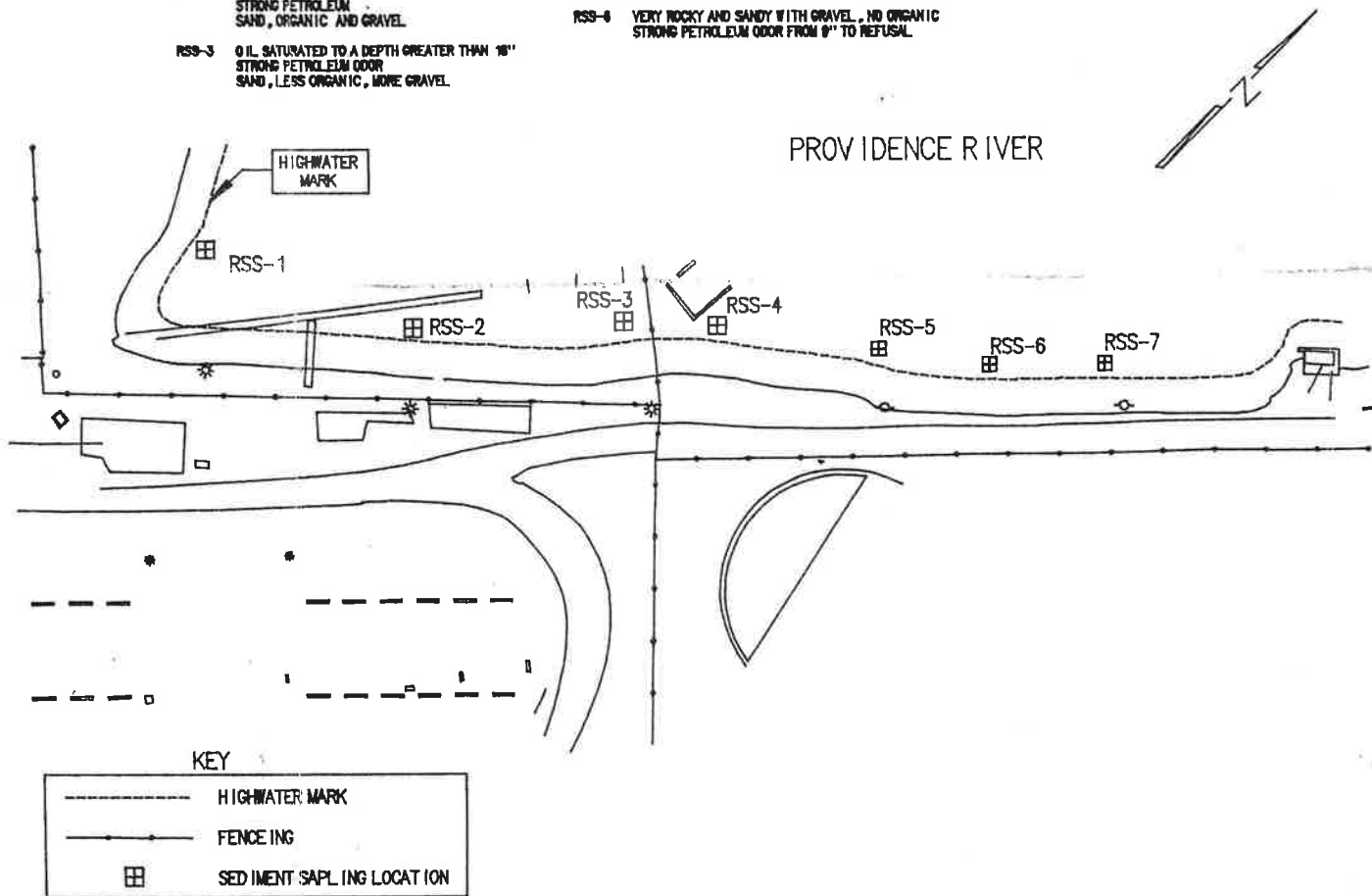
EOIPROV0003860

Field Data:
(6/18/84)

- RSS-1 OIL SATURATED TO A DEPTH GREATER THAN 18"
STRONG PETROLEUM ODOR
SAND, ORGANIC AND GRAVEL
- RSS-2 OIL SATURATED TO A DEPTH GREATER THAN 18"
STRONG PETROLEUM
SAND, ORGANIC AND GRAVEL
- RSS-3 OIL SATURATED TO A DEPTH GREATER THAN 18"
STRONG PETROLEUM ODOR
SAND, LESS ORGANIC, MORE GRAVEL

- RSS-4 CLEAN SANDY GRAVEL TO A DEPTH OF 12"
MILDLY OILY SAND AND GRAVEL AT 12" TO GREATER THAN 18"
- RSS-5 VERY ROCKY AND SANDY WITH GRAVEL, NO ORGANIC
LIGHT PETROLEUM ODOR FROM 9" TO REFUSAL
- RSS-6 VERY ROCKY AND SANDY WITH GRAVEL, NO ORGANIC
STRONG PETROLEUM ODOR FROM 9" TO REFUSAL

- RSS-7 HEAVY OIL SATURATED GRAVEL
STRONG ODOR
REFUSAL AT 12"



PART PLAN - SEDIMENT SAMPLING DIAGRAM
RSS - RIVER SEDIMENT SAMPLING LOCATIONS

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B07

Date: 1/27/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 5.3'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1100 | 0.0 | (0-3") F/M brown sand with SO gravel; dry; no odor. (3-10") F/loose black cinder ash and M/large black cinders; dry; no odor. (10-24") F/C brown sand with LI gravel. |
| B | 2-4 | 45/48 | | 0.7 | (27-40") F brown sand with TR black cinder ash and SO gravel; dry; no odor. (40-45") F orange/yellow sand; dry; no odor. (45-72") F gray stained/ brown sand with TR silt and TR gravel; saturated with petroleum; wet at 69"; sheen observed; heavy petroleum odor. |
| C | 4-6 | | 1115 | 16.5 | |
| D | 6-8 | 28/48 | | 7.2 | |
| E | 8-10 | | | 7.2 | (92-97") F gray sand with TR silt with water; heavy petroleum odor. (97-120") F brown stained sand with LI silt; saturated with water; heavy petroleum odor. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | N/A | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: B08
Date: 1/27/00
Within 100' of Water: Yes
Instrument: Thermo Environment
Instruments, Inc., Model 580B OVM
Boring Depth: 10.0'
Depth to Water: 8.5'
Logged By: Jason Wiggin

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1110 | 0.0 | (0-6") F/C brown sand; TR gravel; TR silt; dry. (6-24") F/C black cinder ash. |
| B | 2-4 | 40/48 | | 0.4 | (32-35") F/C black cinder ash. (35-48") F/C yellow-brown sand; LI gravel; TR silt; dry. (48-72") F/C yellow-brown sand; LI gravel; TR silt; TR porous cinders, TR black ash; dry |
| C | 4-6 | | 1125 | 1.4 | |
| D | 6-8 | 22/48 | | 1.4 | (96-100") F/C brown sand; LI gravel; TR silt. (100-103") M/C black cinder ash. (103-120") gray-dark gray silt and sand; black staining; wet. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B09

Date: 1/27/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 3.5'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1130 | 0.0 | (0-18") F/M brown sand with SO black sand, LI gravel, LI silt and LI small/M, shiny/dull black cinders; dry; light petroleum odor. (18-24") F/M brown/reddish stained cinders and cinder ash with LI gravel; dry; no odor. |
| B | 2-4 | 43/48 | 1148 | 1.4 | (29-43") F/M brown/orange sand with small/M black cinders and black cinder ash; TR gravel; damp; faint odor. (43-72") F black/gray stained sand with LI gravel and SO silt and SO black cinders; wet; heavy petroleum odor. |
| C | 4-6 | | | 4.8 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



1 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B17

Date: 1/31/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 4.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1215 | 0.0 | (0-5") F/C brown/gray sand with SO TR stained sand with SO gravel; dry; no odor. (5-18") small/M/large, shiny/dull black cinders with SO cinder ash; dry; no odor. (18-24") F/M brown sand and black cinder ash with TR gravel; dry; no odor. |
| B | 2-4 | 32/48 | | 0.0 | (40-45") black cinder ash with SO gravel and SO small cinders. (45-58") F light brown/tan sand with LI gravel; wet; no odor. (58-68") F light brown/tan sand with LI gravel; wet; no odor. (68-72") F gray stained sand with LI silt/gravel; wet; petroleum odor. |
| C | 4-6 | 32/48 | 1230 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: B18
Date: 1/27/00
Within 100' of Water: No
Instrument: Thermo Environment
Instruments, Inc., Model 580B OVM
Boring Depth: 8.0'
Depth to Water: 6.5'
Logged By: Jason Wiggin

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | | 1330 | 0.0 | See note below |
| B | 2-4 | 12/24 | | 1.4 | (26-28") black cinders (>2" diameter). (28-32") Tan silty sand "beach sand". (32-48") F/M brown sand; TR gravel; TR silt; TR cinder ash. (56-60") F/M brown sand; TR gravel; TR silt; TR cinder ash. (60-72") F/C black cinder ash; SO cinders; TR porous cinders. (72-78") C red and brown cinder ash and brick fragments. (78-96") gray sandy/silt; wet |
| C | 4-6 | | 1345 | 0.0 | |
| D | 6-8 | 40/48 | | 0.0 | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| | | | | | |
| G | 12-14 | | | | |

Comments:
Note: (0-2') interval inadvertently retrieved within limits of remediation material handling area. Sample discarded. No other surface sample retrieved.

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | N/A | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B20

Date: 1/31/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 2.5'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1240 | 0.0 | (0-4") brown topsoil. (4-24") black/orange cinder with SO shiny and dull black cinders; dry; no odor. |
| B | 2-4 | 40/48 | | 0.0 | (32-42") black cinder ash with SO black stained sand; wet; no odor. (42-53") F brown/gray sand with SO silt and TR gravel; wet; no odor. (53-72") F gray stained sand with TR silt and TR gravel; wet; heavy petroleum odor; sheen present. |
| C | 4-6 | | 1250 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | N/A | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B21

Date: 1/31/00

Within 100' of Water: Yes

Instrument: Thermo Environment
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.3'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1300 | 0.0 | (0-10") F/M gray/brown sand and gravel; dry; no odor. (10-11") F/C light brown sand with SO gravel; dry; no odor. (11-24") M/large black cinder ash and black/dark cinder ash; dry; no odor. |
| B | 2-4 | 41/48 | | 0.0 | (31-42") F/C black stained sand and cinder ash with SO gravel and SO brick cinders; wet; no odor. (42-50") F brown/dark brown sand; damp; odor present. (50-72") F gray/brown stained sand with TR gravel; wet; heavy odor. |
| C | 4-6 | | 1315 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND : 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B22

Date: 1/31/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.6'

Logged By: Daryll Issa

| Depth (Intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1330 | 0.0 | (0-3") F/M brown sand and gravel; dry; no odor. (3-11") F/M brown sand with SO gravel; dry; no odor. (11-24") M/large black cinders with SO F brown/dark brown sand; dry; no odor. |
| B | 2-4 | 33/48 | | 0.0 | (39-49") black cinder ash and black cinders; dry; no odor. (49-68") F/C light brown sand with TR gravel; damp; no odor. (68-72") F black sand with TR silt and TR gravel; wet; no odor. |
| C | 4-6 | 33/48 | 1340 | 0.0 | |
| D | 6-8 | 47/48 | | 0.0 | (73-90") F/C brown sand; TR silt. (90-92") F/M brown sand and black coal ash. (92-120") F/M brown sand; LI silt; black staining; petroleum odor. |
| E | 8-10 | | | 0.0 | |
| | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|--|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | (+.75'-4.0') PVC Solid Riser (4.0-9.0') PVC Screen One inch sump at 9.0' | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B23

Date: 1/31/00

Within 100' of Water: Yes

Instrument: Thermo Environment
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1355 | 0.0 | (3-6") F/M gray/brown sand and gravel; dry; no odor. (6-24") F/C light brown sand and gravel; dry; no odor. |
| B | 2-4 | 38/48 | | 0.0 | (34-56") F/M brown sand with SO gravel; dry; no odor. (56-61") F dark brown sand with LI silt and TR gravel; wet; no odor. (61-65') black cinders and cinder ash; wet; no odor. (65-72") F brown sand and silt; wet; no odor. |
| C | 4-6 | | 1410 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B24

Date: 2/1/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 8.4'

Logged By: Jason Wiggin

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 0940 | 0.0 | (0-12") F/M brown sand; SO gravel; TR silt. (12-22") F/M brown/tan sand; TR silt; dry. (22-24") F/M dark brown sand; LI silt; TR cinders. |
| B | 2-4 | 45/48 | | 0.0 | (27-29") F/C gray sand; TR silt; dry. (29-34") F brown sand; LI silt; dry. (34-38") F/C black coal ash; LI F/M brown sand. (38-43") F/M brown sand; TR silt; TR cinders at 40"; TR yellow ash at 42"; dry. (43-48") F/C black coal ash; LI F/M brown sand; dry. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 38/48 | 1010 | 0.0 | |
| E | 8-10 | | | 0.0 | (82-88") F/M black sand; LI silt; dry. (88-91") F/C tan sand; SO silt; dry. (91-93") F dark brown sand; SO silt; TR cinders; moist. (93-101") F brown sand; SO silt; moist. (101-118") F brown/gray sand and silt; wet. (118-120") petroleum stain/odor; TR coal/ash; wet. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B25

Date: 2/1/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 9.0'

Logged By: Jason Wiggin

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1020 | 0.0 | (0-24") F/C brown sand and gravel; TR silt; TR brick fragments at 7"; TR coal and ash throughout sample; dry. |
| B | 2-4 | 38/48 | | 0.0 | (34-72") F/M brown sand and F/M black coal ash/coal fragments; TR silt; TR porous cinders; dry. |
| C | 4-6 | | 1040 | 0.0 | |
| D | 6-8 | 24/48 | | 0.0 | |
| E | 8-10 | | | 5.0 | (96-100") F/M brown/black sand; LI silt; moist. (100-102") F/M tan sand; TR silt; moist. (102-107") F/M brown/black sand; LI silt; TR porous cinders; moist. (107-120") F/C brown sand, LI silt; TR gravel; stained gray from 117-120" with petroleum odor; wet. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | N/A | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LJ) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: B26 |
| ESS Job No: P151-002 | Date: 2/3/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: Yes |
| Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 10.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 9.5' |
| | Logged By: Jason Wiggin |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 0950 | 0.0 | (0-24") F/M brown sand and F cinder ash; LI C cinders; TR F gravel; TR silt; brick fragments at 22". |
| B | 2-4 | 32/48 | | 0.0 | (40-45") F black cinder ash; TR F brown sand; TR gravel; dry. (45-49") F/M brown sand; LI silt; LI brick fragments; dry. (49-54") black F ash; TR F brown sand; TR gravel; dry. (54-61") F/C tan/yellow ash and C gravel sized cinders; dry. (61-72") F/C black ash and F gravel sized cinders; SO brick; dry. |
| C | 4-6 | | 1005 | 0.0 | |
| D | 6-8 | 33/48 | | 0.0 | (87-92") F/C black cinder ash and F gravel sized cinders; SO brick; dry. (92-94") F/M black ash and black cinders. (94-97") F/C brown sand; LI silt; dry. (97-120") C black sand F gravel sized cinders/porous cinders; wet. |
| E | 8-10 | | | 0.0 | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|---|------------------------|-------------------|--|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: D94

Date: 1/28/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1425 | 0.0 | (0-6") F/M brown/dark brown sand with SO gravel; dry; no odor. (6-11") F/M light brown sand with LI gravel; dry; no odor. (11-24") small/large black shiny/dull cinders with SO cinder ash; dry; faint odor. |
| B | 2-4 | 42/48 | | 0.0 | (30-33") black cinders and cinder ash; dry; no odor. (33-72") F light brown sand with LI gravel; wet at 60-72"; no odor. |
| C | 4-6 | | 1440 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

Test Pit Excavation Log



Environmental Science Services, Inc.
 272 West Exchange Street, Suite 101
 Providence, Rhode Island 02903 (401) 421-0398
 Environmental Scientists, Engineers, and Planners



| | | | |
|-----------------|---|-------------------|--------------|
| Client | Providence Gas Company | Test Pit No. | B09 |
| Site Name | Allens Avenue Remediation Project | Date | 9/5/00 |
| Site Address | 642 Allens Avenue, Providence, Rhode Island | Observed By | Daryll Issa |
| Job Number | P151-002 | Checked By | Gary Kaufman |
| Contractor | Tantara Corporation | Test Pit Depth | 10 feet |
| Excavator Reach | 12 feet | Groundwater Depth | 6 feet |

Test Pit Description

- 0-3" Fine/medium brown sand with some gravel, dry, no odor.
- 3-10" Fine/medium black sand with black cinders/ash, dry, no odor.
- 10-36" Fine light brown sand, dry, no odor.
- 36-48" Fine/medium gray to olive gray sand with trace gravel, dry, strong petroleum odor.
- 48-72" Fine/medium gray sand with trace gravel, damp, petroleum odor, PID=48.0 ppm.
- 72-120" Fine/medium gray sand with trace gravel, wet, petroleum odor, PID=48.0 ppm.

Remarks:

Groundwater entered hole at approximately 72". Was able to excavate to 120" prior to hole filling with water.

Location/Sketch:

Within 100 feet of the river, adjacent to B09. See Figure 2 in SIR.



272 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

Site: Providence Gas/Algonquin Gas

Well / Boring No.: RHB-1

Job No: P151-000.1

Ground Elevation:

Drilling Co.: Envirotech

ESS Inspector: Erik A. Johnstone

Method: Hollow Stem Auger

Well Diameter: NA

Instrument:

Sample Method: Split spoon

Water Level: NA

Well / Boring Depth: 10'

Date: 9/3/98

Logged By: Erik A. Johnstone

Checked by:

| Sample No. | Recovery/ Penetration (in inches) | Blow Counts | Headspace (ppm) | Depth (feet) | Soil Log | Materials Description (size, grade, color, moisture) | | | |
|------------|---|----------------------|--------------------|--------------|----------|--|--|--|----------------|
| 0-1 | | | | 2 | | Concrete. | | | () PVC Riser |
| 1-3 | 16" | 8 | 7.1-7.7 | 4 | | F to M sand (13") grey-green; some cobbles. 13"-16" F to M sand; black. | | | |
| 3-5 | 16" | 32 37 25 29 | 4.0-4.6 | 6 | | Grey/brown M sand; some cobbles; some dark staining; no odor. | | | () PVC Screen |
| 5-7 | 15" | 40 26 21 25 | 18.1 | 8 | | Grey/green medium sand; some cobbles; no odor. | | | |
| 7-9 | 10" | 5 63 30 32 | 9.2-9.7 | 10 | | Grey/brown medium sand; some cobbles. Yellow/grey M to coarse sand; wet; slight odor. | | | |
| 9-10 | 12" | 48 60 | 57.4 | 12 | | Grey/brown medium sand; wet; slight odor. | | | |

Comments

Well Location

| PROPORTIONS USED | ABBREVIATIONS | |
|---------------------|------------------------|--|
| TRACE (TR.) 0-10% | F = FINE | |
| LITTLE (LI.) 10-20% | M = MEDIUM | |
| SOME (SO.) 20-35% | C = COARSE | |
| AND 35-50% | F/M = FINE TO MEDIUM | |
| | F/C = FINE TO COARSE | |
| | M/C = MEDIUM TO COARSE | |



272 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

Site: Providence Gas/Algonquin Gas

Well / Boring No.: RHB-2

Job No: P151-000.1

Ground Elevation:

Drilling Co.: Envirotech

ESS Inspector: Erik A. Johnstone

Drill Method: Hollow Stem Auger

Well Diameter: NA

Instrument:

Sample Method: Split spoon

Water Level: NA

Well / Boring Depth: 9'

Date: 9/3/98


Logged By: Erik A. Johnstone

Checked by:

| Sample No. | Recovery/ Penetration (in inches) | Blow Counts | Headspace (ppm) | Depth (feet) | Soil Log | Materials Description (size, grade, color, moisture) | | | |
|------------|---|------------------|--------------------|--------------|----------|---|--|--|----------------|
| 0-1 | | | | 0 | | Concrete. | | | () PVC Riser |
| 1-3 | 6" | 3 4 3 3 | 2 | 2 | | F to M brown sand; no odor. | | | |
| 3-5 | 3" | 3 5 3 3 | 1 | 4 | | M brown sand; no odor. | | | () PVC Screen |
| 5-7 | 3" | 3 3 4 3 | 43 | 6 | | M/C brown sand; wet petroleum staining wet; petroleum odor. | | | |
| 7-9 | 6" | 5 6 | 186 | 8 | | M/C Brown sand; wet petroleum staining and odor. | | | |
| | | | | 10 | | | | | |
| | | | | 12 | | | | | |

Comments
 9/4/98 PID readings in office GK

Well Location

| PROPORTIONS USED | ABBREVIATIONS | |
|---------------------|------------------------|---|
| TRACE (TR.) 0-10% | F = FINE |  |
| LITTLE (LI.) 10-20% | M = MEDIUM | |
| SOME (SO.) 20-35% | C = COARSE | |
| AND 35-50% | F/M = FINE TO MEDIUM | |
| | F/C = FINE TO COARSE | |
| | M/C = MEDIUM TO COARSE | |



272 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

Site: Providence Gas/Algonquin Gas

Well / Boring No.: RHB-3

Job No: P151-000.1

Ground Elevation:

Drilling Co.: Envirotech

ESS Inspector: Erik A. Johnstone

Method: Hollow Stem Auger

Well Diameter: NA

Instrument:

Sample Method: Split spoon

Water Level: NA

Well / Boring Depth: 9'

Date: 9/3/98


Logged By: Erik A. Johnstone

Checked by:

| Sample No. | Recovery/ Penetration (in inches) | Blow Counts | Headspace (ppm) | Depth (feet) | Soil Log | Materials Description (size, grade, color, moisture) | | |
|------------|---|----------------------|--------------------|--------------|----------|---|--|----------------|
| 0-1 | | | | 2 | | Concrete. | | () PVC Riser |
| 1-3 | 11" | 4 4 4 6 | 3.8 | 4 | | F/M brown sand; some cobbles; slight odor. | | |
| 3-5 | 13" | 5 10 15 16 | 4.3 | 6 | | M/C brown/grey sand; some cobbles. | | () PVC Screen |
| 5-7 | 6" | 36 42 75 29 | 4.6 | 8 | | M/C brown/grey sand; some cobbles; wet; no odor. | | |
| 7-9 | 13" | 22 16 71 80 | 180 | 10 | | F/M brown/grey sand, wet; petroleum odor. | | |
| | | | | 12 | | | | |

Comments
 9/4/98 PID readings in office GK

Well Location

| PROPORTIONS USED | ABBREVIATIONS | |
|---------------------|------------------------|---|
| TRACE (TR.) 0-10% | F = FINE |  |
| LITTLE (LI.) 10-20% | M = MEDIUM | |
| SOME (SO.) 20-35% | C = COARSE | |
| AND 35-50% | F/M = FINE TO MEDIUM | |
| | F/C = FINE TO COARSE | |
| | M/C = MEDIUM TO COARSE | |



272 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

Site: Providence Gas/Algonquin Gas; Allens Avenue

Well / Boring No.: RHB-6

Job No: P151-000.1

Ground Elevation:

Drilling Co.: Envirotech

ESS Inspector: Erik A. Johnstone

Drill Method: Hollow Stem Auger

Well Diameter: NA

Instrument:

Sample Method: Split spoon

Water Level: NA

Well / Boring Depth: 9'

Date: 9/4/98

Logged By: Erik A. Johnstone

Checked by:

| Sample No. | Recovery/ Penetration (in inches) | Blow Counts | Headspace (ppm) | Depth (feet) | Soil Log | Materials Description (size, grade, color, moisture) | | | |
|------------|---|----------------------|--------------------|--------------|----------|---|--|--|----------------|
| 0-1 | NA | NA | NA | 0-2 | | Concrete. | | | () PVC Riser |
| 1-3 | 11" | 7 10 11 10 | - | 2-4 | | Medium grey/brown sand and cobbles; moist; moderate odor. | | | |
| 3-5 | 15" | 9 15 25 47 | - | 4-6 | | F/M grey sand cobbles; moist; moderate odor. | | | () PVC Screen |
| 5-7 | 9.5" | 25 26 22 18 | - | 6-8 | | F/M grey/yellow sand; some cobbles; slight odor. | | | |
| 7-9 | 7" | 8 13 12 16 | - | 8-10 | | F/M grey sand; little cobbles; wet; moderate odor. | | | |
| | | | | 10-12 | | | | | |

Comments

Well Location

| PROPORTIONS USED | ABBREVIATIONS | |
|---------------------|------------------------|--|
| TRACE (TR.) 0-10% | F = FINE | |
| LITTLE (LI.) 10-20% | M = MEDIUM | |
| SOME (SO.) 20-35% | C = COARSE | |
| AND 35-50% | F/M = FINE TO MEDIUM | |
| | F/C = FINE TO COARSE | |
| | M/C = MEDIUM TO COARSE | |

Soil Boring Report

PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. **VHB-4**
 Well ID: **NA**
 Job Number: **71274** Sheet 1 of 1

Drilling Company: **Subsurface Drilling and Remediation**

Boring Location:

Driller: **Jim Goldthwaite / Josh Downing**

Elevation: **NA** Datum: **NA**

Inspector: **Keith Sullivan / Adam Rosenblatt**

Start Date: **1/14/2002** End Date: **1/14/2002**

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2" split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|---------------------|---|--------------|
| 0 - 2 | 1.2 | S1 | 24 / 13 | 2 - 4 9 - 9 | Very dark grayish brown (10YR 3/2) over black (10YR 2/1) over very dark grayish brown (10YR 3/2) over light brownish gray (2.5Y 6/2) over black (10YR2/1), medium dense, fine SAND, little silt, some gravel, moist, no sheen or odors. | |
| 2 - 4 | ND | S2 | 24 / 9 | 5 - 6 14 - 20 | Black (10YR 2/1) over light brownish gray (2.5Y 6/2), medium dense, fine SAND, some gravel, moist, no sheen or odors. | |
| 4 - 6 | 3.0 | S3 | 24 / 13 | 6 - 9 6 - 7 | Very dark grayish brown (10YR 3/2) over light brownish gray (2.5Y 6/2), medium dense, fine SAND, some gravel, wet, no sheen or odors. | |
| 6 - 8 | 53.0 | S4 | 24 / 13 | 5 - 3 2 - 5 | Light brownish gray (2.5Y 6/2), loose, fine sand, trace gravel over black (10YR 2/1) fine sand, some silt, wet, faint chemical odor. | |
| 8 - 10 | 52.0 | S5 | 24 / 14 | 5 - 1 1 - 2 | Grayish brown (10YR 5/2), very loose, fine sand, little silt, trace gravel, wet, faint chemical odor, separate phase product. | |
| 10 - 12 | 46.0 | S6 | 24 / 6 | w/rod - 3 6 - 10 | Dark gray to dark grayish brown (2.5Y4/1-4/2) loose, fine sand, little silt, trace gravel, wet, faint chemical odor, separate phase product on sample bag. | |
| 12 - 14 | 20.0 | S7 | 24 / 4 | 4 - 5 9 - 10 | Black, medium dense, fine sand, little silt, some gravel, wet, moderate chemical odor, slight sheen on sample, stained. | |

Bottom of exploration 14' below grade.

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|------------------------------------|----------|------------------------------------|----------|-------------|----------|-------|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

| | |
|--|--|
| BORING CO. <u>Guild</u> | BORING LOCATION <u>See Exploration Location Plan</u> |
| FOREMAN <u>Tom Paquette, John Medeiros</u> | GROUND SURFACE ELEV. <u>±14'</u> DATUM <u>MLLW</u> |
| GZA ENG. <u>Joanne Kissinger</u> | DATE START <u>4/19/04</u> DATE END <u>4/19/04</u> |

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE: 5" OTHER:

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | S-1 | 18/10 | 0-1.5 | 3-8 | Medium dense, brown, fine to medium SAND, trace fine | 1 | GRANULAR |
| | | | | | 60/6" | Gravel, trace Silt | | FILL |
| 5 | | | | | | Refusal at ±1.5' | | |
| 10 | | | | | | | | |
| 15 | | | | | | | | |
| 20 | | | | | | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |

| | | |
|------------------------------------|------------------------------------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 1. Obstruction encountered. Relocated hole 5' away. |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | | | | PROJECT KeySpan LNG Terminal Providence, Rhode Island | | REPORT OF BORING NO. GZ-7 (C) SHEET 1 of 5 FILE NO. 32784 CHKD BY DMA | | |
|---|--------------|--------|----------|---|----------|--|------------------|---------------------|
| BORING CO. Guild | | | | BORING LOCATION See Exploration Location Plan | | | | |
| FOREMAN Tom Paquette, John Mederios | | | | GROUND SURFACE ELEV. ±14' | | DATUM MLLW | | |
| GZA ENG. Joanne Kissinger | | | | DATE START 4/19/04 | | DATE END 4/24/04 | | |
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | | | | GROUNDWATER READINGS | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | | | | DATE | TIME | WATER | CASING | |
| CASING SIZE: 5" / 4" OTHER: | | | | 4/24/04 | | ±11' | | |
| STABILIZATION TIME | | | | | | | | |
| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | S | | | | | | 1 2 3 4 | GRANULAR FILL |
| | S | | | | | | | |
| | S | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-5 | 24/2 | 8-10 | 4-1 | Loose, gray, fine to coarse (-) SAND, little Silt (wet) | | |
| | S | | | | 3-5 | | | |
| | S | | | | | | | |
| 10 | S | | | | | | 5 | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-6 | 24/0 | 14-16 | 19-18 | NO RECOVERY | | |
| | S | | | | 15-14 | | | |
| | S | S-7 | 24/4 | 16-18 | PUSH | Loose, black, fine to medium SAND, trace Silt (wet) | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 15 | S | | | | | | 6 | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-8 | 24/6 | 19-21 | 20-8 | Medium dense, dark brown, FIBROUS WOOD, trace medium Sand (wet) | | |
| | S | | | | 5-5 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 20 | S | | | | | | 7 | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-9A | 24/0 | 24-26 | 15-3 | NO RECOVERY | | |
| | S | | | | 1-2 | | | |
| | S | S-9B | 24/15 | 24-26 | PUSH | Very soft, gray, Organic SILT, trace Organics, Fibers, Shells | | |
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GEOTECH/GEOHYDROLOGICAL CONSULTANTS

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|---------|------------|----------------|---|--------|------------------------|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | |
| 30 | | UP-2 | 24/8 | 31-33 | | Undisturbed Piston Sample | 10 | ORGANIC SILT |
| | | | | | | | | |
| | | | | | | | | |
| 35 | | S-11 | 24/19 | 34-36 | 2-1 1/12" | Very soft, gray, ORGANIC SILT, trace Fibers | 11 | |
| | | | | | | | | |
| | | | | | | | | |
| 40 | | S-12 | 24/13 | 39-41 | WOR/18" 1 | Very soft, gray, ORGANIC SILT, trace Organics, Shells, Fibers | 12 | |
| | | | | | | | | |
| | | | | | | | | |
| 45 | | S-13 | 24/5 | 44-46 | 1-3 2-2 | Medium stiff, gray, ORGANIC SILT, trace Organics, Shells, Fibers | 13 | |
| | | | | | | | | |
| | | | | | | | | |
| 50 | | S-14 | 24/5 | 49-51 | 6-10 13-14 | (Top 4"): Loose, gray, fine (+) to medium SAND, some Silt (Bottom 1"): Loose, brown, fine (+) to coarse (-) SAND, little Silt | 14 | |
| | | | | | | | | |
| | | | | | | | | |
| 55 | | S-15 | 24/6 | 54-56 | 23-15 15-15 | Dense, brown, fine to coarse (-) SAND, some Silt | 15 | OUTWASH DEPOSITS |
| | | | | | | | | |
| | | | | | | | | |
| 60 | | S-16 | 24/10 | 59-61 | 23-27 20-22 | Dense, gray, fine to coarse (-) SAND, some Silt, trace fine Gravel | 16 | |
| | | | | | | | | |
| | | | | | | | | |
| 65 | | S-17 | 24/12 | 64-66 | 13-12 8-14 | Medium dense, gray, fine to medium SAND, trace Silt | | |
| | | | | | | S-18: (Top 2") Medium dense, gray, coarse SAND and fine Gravel, little fine to medium Sand, trace Silt | | |
| | | | | | | (Bottom 10"): Medium dense, gray, fine to medium SAND, trace Silt | | |
| 70 | | | | | 12-8 | | | |

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| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: 10. Rollerbit ahead to 34'. 11. Rollerbit ahead to 39'. 12. Rollerbit ahead to 44'. 13. Drill ahead to 49'. 14. Drill ahead to 54'. Revert drilling mud introduced to ±54'. (Casing at 54') 15. Drill ahead to 59'. Collect S-16. Drive casing to 59'. 16. Drill ahead to 64'. 4-21-04 drive casing to 64'. |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 30-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | | S-19 | 24/18 | 74-76 | 10-13 | Dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | 17 | OUTWASH DEPOSITS |
| | | | | | 19-19 | | | |
| 80 | | S-20 | 24/14 | 79-81 | 16-13 | Medium dense, gray, fine to medium SAND, trace Silt | | |
| | | | | | 15-14 | | | |
| 85 | | S-21 | 24/16 | 85-87 | 20-17 | Dense, gray, fine to coarse (-) SAND, trace Silt | | |
| | | | | | 16-18 | | | |
| 90 | | S-22 | 24/20 | 89-91 | 20-15 | Dense, gray, fine to medium SAND, trace Silt | | |
| | | | | | 20-18 | | | |
| 95 | | S-23 | 24/6 | 94-96 | 25-28 | Very dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | | |
| | | | | | 26-18 | | | |
| 100 | | S-24 | 24/18 | 99-101 | 17-20 | Dense, gray, fine to medium SAND, little Silt | | |
| | | | | | 21-20 | | | |
| 105 | | S-25 | 24/19 | 104-106 | 14-12 | Medium dense, gray, fine to medium SAND, little Silt | | |
| | | | | | 12-15 | | | |
| 110 | | S-26 | 24/20 | 109-111 | 18-19 | Dense, gray, fine to medium SAND and SILT | | |
| | | | | | 28-37 | | | |
| 115 | | S-27 | 24/12 | 114-116 | 19-18 | Dense, gray, fine to coarse (-) SAND and SILT, trace fine Gravel | | |
| | | | | | 17-17 | | | |

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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 17. Drill ahead to 85'. Cobble encountered at 84'. |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|----------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 120 | | S-28 | 24/12 | 119-121 | 19-27 | Very dense, gray, fine to coarse (-) SAND, some Silt | | |
| | | | | | 28-24 | | | |
| 125 | | S-29 | 24/20 | 124-126 | 23-17 | Dense, gray, fine to coarse (-) SAND, little Silt, trace fine Gravel | | |
| | | | | | 17-16 | | | |
| 130 | | S-30 | 24/12 | 129-131 | 23-21 | (Top 9"): Dense, gray, fine to coarse (-) SAND, some Silt (Bottom 3"): Dense, gray, fine SAND and SILT | | |
| | | | | | 17-19 | | | |
| 135 | | S-31 | 24/12 | 134-136 | 35-31 | Very dense, gray, fine to coarse (-) SAND, some Silt | 18 19 | GLACIAL TILL |
| | | | | | 29-33 | | | |
| 140 | | S-32 | 24/18 | 139-141 | 33-17 | Dense, gray, fine to coarse (-) SAND, some Silt | | |
| | | | | | 23-22 | | | |
| 145 | | S-33 | 24/12 | 144-146 | 67-71 | Very dense, gray, fine to coarse SAND, some Silt | | |
| | | | | | 64-30 | | | |
| 150 | | S-34 | 24/20 | 149-151 | 12-8 | Medium dense, gray, fine SAND, little Silt | 21 22 | |
| | | | | | 12-26 | | | |
| 155 | | S-35 | 24/24 | 154-156 | 27-32 | Very dense, gray, fine SAND, little Silt | 23 24 | |
| | | | | | 26-29 | | | |

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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 18. Hole collapsed (Bottom ±35') (Casing at ±64). 19. ±2" lens fine sand and silt. 20. After sample S-33 spin casing from 64' to 145'. 21. Two hours down time (rig repairs). 22. Drill ahead, approximately 3 feet of cobbles, then casing installed to ±149'. 23. 0.5 hours downtime (oil pressure leak). 24. Drill ahead collapsed, install casing to ±154'. |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 160 | | S-36 | 24/20 | 159-161 | 46-47 | Very dense, gray, fine SAND, and Silt | 25 | |
| | | | | | 58-65 | | | |
| 165 | | S-37 | 6/4 | 164-164.5 | 100/4" | (Top 2"): Very dense, gray, fine to medium SAND and SILT | 26 | GLACIAL TILL |
| | | | | | 23/2" | (Bottom 2"): Very dense, gray weathered SHALE | | |
| 170 | | S-38 | 0/0 | 169-169 | 50/0" | Refusal with spoon | 27 | |
| | | C-1 | 60/8 | 169-174 | min/ft | Gray, fine GRAVEL | | |
| | | | | RQD = 0 % | 5 | | | |
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| 175 | | | | | 4 | | | |
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| | | | | | | | 28 | |
| | | | | | | End of Exploration at ±174' | | |
| 180 | | | | | | | | |
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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 25. Drill ahead install casing to ±159'. 26. Drill ahead from ±159' to ±164'. Casing installed to ±164', Replace pressure gauge. 27. Install casing to ±169'. 28. Casing to ±173'. | | |
| 0-4 | VERY LOOSE | | <2 | VERY SOFT |
| 4-10 | LOOSE | | 2-4 | SOFT |
| 10-30 | MEDIUM DENSE | | 4-8 | M. STIFF |
| 30-50 | DENSE | | 8-15 | STIFF |
| >50 | VERY DENSE | | 15-30 | V. STIFF |
| | | | >30 | HARD |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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| BORING CO. <u>Guild</u> | BORING LOCATION <u>See Exploration Location Plan</u> |
| FOREMAN <u>Tom Paquette, John Medeiros</u> | GROUND SURFACE ELEV. <u>±14'</u> DATUM <u>MLLW</u> |
| GZA ENG. <u>Joanne Kissinger</u> | DATE START <u>4/27/04</u> DATE END <u>4/27/04</u> |

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE: 5" OTHER:

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|----------------------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | | | | | The objective of this boring is to drill to approximately ±27' to collect two undisturbed samples. Spoon samples not needed. Obstructions encountered where noted. | 1 | 0.31 FILL |
| | | | | | | | ±1.4' OBSTRUCTION | |
| | | | | | | | 2 | FILL |
| | | | | | | | 3 | ±3.7' OBSTRUCTION |
| | | | | | | | 3 | ±4.5' FILL |
| 10 | | | | | | 4 | ±7' OBSTRUCTION | |
| | | | | | | | FILL | |
| | | | | | | | CONCRETE OBSTRUCTION | |
| | | | | | | 5 | ±12.3' | |
| | | | | | | 6 | WOOD OBSTRUCTION | |
| 15 | | | | | | End of Exploration at ±14' | | |
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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Through five obstructions encountered. |
| 4-10 LOOSE | 2-4 SOFT | 6. Casing drive shoe left in hole. Casing shoe broke 36" wrench. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 7. Hole was relocated approximately 10' away. |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | |
|--|--|
| BORING CO. <u>Guild</u> | BORING LOCATION <u>See Exploration Location Plan</u> |
| FOREMAN <u>Tom Paquette, John Medeiros</u> | GROUND SURFACE ELEV. <u>±14'</u> DATUM <u>MLLW</u> |
| GZA ENG. <u>Joanne Kissinger</u> | DATE START <u>4/28/04</u> DATE END <u>4/28/04</u> |

| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>5"</u> OTHER: | GROUNDWATER READINGS | | | | | | | | | | | | | | | | | | | | |
|--|--|-------|--------|--------------------|--------|--------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | |
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | | | | | The objective of this boring is to drill to approximately 27' depth to collect two undisturbed samples. Spoon samples not needed | | |
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| | | | | | | | | |
| 30 | | UP-1 | 24/23 | 27-29 | | UNDISTURBED PISTON SAMPLE OF ORGANIC SILT | | |
| | | UP-2 | 24/22 | 29-31 | | UNDISTURBED PISTON SAMPLE OF ORGANIC SILT | | |
| | | | | | | | | |
| | | | | | | End of Exploration at ±31' | | |

| | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>GRANULAR SOILS BLOWS/FT DENSITY</th> <th>COHESIVE SOILS BLOWS/FT DENSITY</th> </tr> <tr> <td>0-4 VERY LOOSE</td> <td><2 VERY SOFT</td> </tr> <tr> <td>4-10 LOOSE</td> <td>2-4 SOFT</td> </tr> <tr> <td>10-30 MEDIUM DENSE</td> <td>4-8 M. STIFF</td> </tr> <tr> <td>30-50 DENSE</td> <td>8-15 STIFF</td> </tr> <tr> <td>>50 VERY DENSE</td> <td>15-30 V. STIFF</td> </tr> <tr> <td></td> <td>>30 HARD</td> </tr> </table> | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | 0-4 VERY LOOSE | <2 VERY SOFT | 4-10 LOOSE | 2-4 SOFT | 10-30 MEDIUM DENSE | 4-8 M. STIFF | 30-50 DENSE | 8-15 STIFF | >50 VERY DENSE | 15-30 V. STIFF | | >30 HARD | REMARKS: |
|------------------------------------|---|------------------------------------|------------------------------------|---------------------|-------------------|----------------|---------------|----------------------|-------------------|---------------|----------------|--------------------|------------------|--|--------------|----------|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | | | | | | | | | | | | | | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | | | | | | | | | | | | | | | |
| 4-10 LOOSE | 2-4 SOFT | | | | | | | | | | | | | | | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | | | | | | | | | | | | | | | |
| 30-50 DENSE | 8-15 STIFF | | | | | | | | | | | | | | | |
| >50 VERY DENSE | 15-30 V. STIFF | | | | | | | | | | | | | | | |
| | >30 HARD | | | | | | | | | | | | | | | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 1 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.78
Final Boring Depth (ft.): 36
Date Start - Finish: 5/19/2014 - 5/27/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 8.49 | 2 Days |
| 6/10/14 | 7:55 | 7.23 | 14 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Red-brown (10YR, 4/4) fine to coarse SAND, little Slag, trace Ash, trace Silt, dry | 1 2 | 0.4 | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/4) fine SAND, little Silt, trace Gravel, moist | | 0.1 | | | | | Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Yellow brown (10YR, /4) fine SAND, little Silt, trace Gravel, slight oil-like odor, moist/wet | | 22 | | Sigt | | FILL | |
| 4 | S-4 | 6-8 | 24 | 5 | WOH 1 1 11 | S-4 : Very loose, gray (GLE Y 1, 4/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, wet | | 3 | | | | | |
| 5 | S-5 | 8-10 | 24 | 0 | WOH 1 3 4 | S-5 : Loose, granular soil, no recovery | 3 | NM | | | | | |
| 6 | S-6 | 10-12 | 24 | 21 | 6 1 5 6 | S-6 : Loose, gray (GLE Y 1, 3/N) fine (+) to coarse SAND, little Silt, trace Gravel, slight oil-like odor, slight sheen, wet | | 242 | | Sigt | 10 | -0.2 | |
| 7 | S-7 | 12-14 | 24 | 13 | 9 8 9 9 | S-7 : Medium dense, gray (GLE Y 1, 3/N) fine (+) to coarse SAND, little Silt, trace Gravel, slight oil-like odor, slight sheen, wet | | 108 | | Sigt | | Possible Fill/Sands | PVC Riser |
| 8 | S-8 | 14-16 | 24 | 110 | 8 9 4 3 | S-8 : Medium dense, gray (GLE Y 1, 3/N) fine to coarse SAND, little (-) Gravel, little (-) Silt, slight oil-like odor, slight sheen, wet | | 104 | | | | | Filter Sand |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:26 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 2 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|--------|---------------------|----------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Description | |
| 16 | S-9 | 16-18 | 24 | 6 | 4 5 | S-9 : Medium dense, gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, slight sheen, wet | | 205 | Slight | Slight | | | |
| 17 | | | | | 8 6 | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 8 | 6 27 | S-10 : Very dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, slight sheen, wet | 4 | 252 | Slight | Slight | | | |
| 19 | | | | | 37 22 | | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 9 | 10 8 | S-11 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, wet | | 67 | Slight | Slight | Possible Fill/Sands | | |
| 21 | | | | | 3 3 | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 1 | 5 7 | S-12 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, wet | | 32 | Slight | Slight | | | |
| 23 | | | | | 7 1 | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 4 | 15 12 | S-13 : Dense, gray (GLEY 1, 3/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, wet | | 48 | Slight | Slight | | Bentonite Seal | |
| 25 | | | | | 18 15 | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 9 | 14 18 | S-14 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, wet | | 3 | Slight | Slight | 26 - - - - -16.2 | | |
| 27 | | | | | 9 9 | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 8 | 9 6 | S-15 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace (+) Gravel, trace (+) Silt, wet | | 3 | Slight | Slight | | Well Screen | |
| 29 | | | | | 5 4 | | | | | | | | |
| 30 | S-16 | 30-32 | 24 | 2 | 6 5 | S-16 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace Gravel, trace Silt, wet | | 0.5 | Slight | Slight | | | |
| 31 | | | | | 7 6 | | | | | | | | |
| 32 | S-17 | 32-34 | 24 | 12 | 6 6 | S-17 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace Gravel, trace Silt, wet | | 2 | Slight | Slight | | Filter Sand | |
| 33 | | | | | 12 16 | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 36 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-26 feet bgs; Filter Sand placed in annulus from 0-2, 3-24 and 25-36 feet bgs; Bentonite Seals installed from 2-3 and 24-25 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

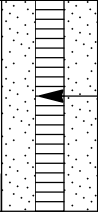
TEST BORING LOG



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EXPLORATION NO.: GZ-313D
SHEET: 3 of 3
PROJECT NO: 33554
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| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|-------------|---------------------|-------------|---|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 34 | S-18 | 34-36 | 24 | 11 | 15 13 18 18 | S-18 : Dense, gray (GLEYS 1, 5/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | 1 | | | | | |  Well Screen |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | End of exploration at 36 feet. | | | | | 36 | | -26.2 | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |

REMARKS

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Exploration No.:
GZ-313D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-314D
SHEET: 1 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.13
Final Boring Depth (ft.): 34
Date Start - Finish: 5/27/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 6/4/14 | 11:00 | 8.99 | 1 Day |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth (ft.) Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|-------------|-----------------|--------|------|---|--------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Gray brown (10YR, 5/2) fine SAND, little Gravel, little Silt, dry, moderate oil-like odor | 1 2 3 | 61.2 | | | CRUSHED STONE 10.9 | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine to coarse SAND, little Gravel, little Silt, trace Brick, trace Slag, oil-like staining, moderate oil-like odor, moist | | 108 | | Mod | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine to coarse SAND, little Gravel, little Silt, trace Brick, trace Slag, oil-like staining, moderate oil-like odor, moist | | 175 | | Mod | | |
| 4 | S-4 | 6-8 | 24 | 8 | 15 16 15 9 | S-4 : Dense, light gray (GLEY 1, 7/N) fine to medium SAND, some Gravel, trace Silt, slight oil-like odor, wet | 4 | 9 | | Sigt | | |
| 5 | S-5 | 8-10 | 24 | 11 | 7 6 6 9 | S-5 : Medium dense, very dark brown (10YR, 3/1) fine to coarse SAND and GRAVEL, little Silt, slight oil-like odor, wet | | 26 | | Sigt | FILL | |
| 6 | S-6 | 10-12 | 24 | 6 | 4 4 WOH 1 | S-6 : Loose, dark grayish brown (10YR, 4/2) fine to medium SAND, little Silt, trace Gravel, trace Brick, wet | | 3.6 | | | | |
| 7 | S-7 | 12-14 | 24 | 1 | 3 5 11 7 | S-7 : Medium dense, black (10YR, 2/1) fine SAND and SILT, strong oil-like odor, oil-like staining, wet | | 136 | | Strg | | PVC Riser Filter Sand |
| 8 | S-8 | 14-16 | 24 | 12 | 3 3 3 3 | S-8 : Loose, black (10YR, 2/1) fine to medium SAND, some Silt, trace Gravel, strong oil-like odor, oil-like staining, slight sheen, wet | | 426 | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - 2" of crushed stone present at the surface.

4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-314D

TEST BORING LOG



**National Grid
642 Allens Avenue
Providence, Rhode Island**

**EXPLORATION NO.: GZ-314D
SHEET: 2 of 3
PROJECT NO: 33554
REVIEWED BY: MSK**

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 15 | 3 2 3 3 | S-9 : 0-7" Black (10YR, 2/1) fine to medium SAND, some Silt, trace Gravel, strong oil-like odor, oil-like staining, slight sheen, wet 7"-15" Black (10YR, 2/1) fine SAND and SILT, some Gravel, oil-like coating, strong oil-like odor, wet | | 408 230 | Strg Strg | | | | |
| 17 | | | | | | | | | | | FILL | | |
| 18 | S-10 | 18-20 | 24 | 19 | 3 2 1 1 | S-10 : 0-3" Black (10YR, 2/1) fine SAND and SILT, some Gravel, oil-like coating, strong oil-like odor, wet 3"-7" Very dark brown (10YR, 3/1) fine to coarse SAND, some Gravel, little Silt, strong oil-like odor, oil-like coating, wet 7"-19" Very dark greenish gray (GLE Y 1, 4/5GY) SILTY CLAY, trace Shells, slight oil-like odor, wet | | 142 190 | Strg Strg | | | | |
| 19 | | | | | | | | 18 | | Sigt | 19 | -7.9 | |
| 20 | S-11 | 20-22 | 24 | 0 | WOH 1 1 | S-11 : Very soft cohesive soils, no recovery | | NM | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 3 2 3 2 | S-12 : Medium stiff, greenish gray (GLE Y 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | 5 | 24 | | Sigt | | | Bentonite Seal |
| 23 | | | | | | | | | | | | | Filter Sand |
| 24 | S-13 | 24-26 | 24 | 5 | WOH | S-13 : Very soft, greenish gray (GLE Y 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 19 | | Sigt | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 15 | WOH | S-14 : Very soft, greenish gray (GLE Y 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 10 | | Sigt | ORGANIC SILT | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 2 | WOH | S-15 : Very soft, greenish gray (GLE Y 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 2.5 | | Sigt | | | |
| 29 | | | | | | | | | | | | | |
| 30 | S-16 | 30-32 | 24 | 23 | WOH | S-16 : Very soft, very dark greenish gray (GLE Y 1, 3/10Y) ORGANIC SILT, trace Shells, trace Wood fibers, faint organic odor, wet | | 2.3 | | Sigt | | | |
| 31 | | | | | | | | | | | | | |
| 32 | S-17 | 32-34 | 24 | 17 | WOH | S-17 : Very soft, very dark greenish gray (GLE Y 1, 3/10Y) ORGANIC SILT, trace Shells, trace Wood fibers, faint organic odor, wet | | 1.4 | | Sigt | | | Well Screen |
| 33 | | | | | | | | | | | | | |

REMARKS

5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 34 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-24 feet bgs; Filter Sand placed in annulus from 22-34 feet bgs; Bentonite Seals installed from 22-23 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
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TEST BORING LOG



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EXPLORATION NO.: GZ-314D
SHEET: 3 of 3
PROJECT NO: 33554
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| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---------------------------------------|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 34 | | | | | | End of exploration at 34 feet. | | | | | 34 | ORGANIC SILT | -22.9 | |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-314D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-314S
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.13
Final Boring Depth (ft.): 19
Date Start - Finish: 5/27/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 6/4/14 | 11:05 | 9.05 | 1 Day |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth (ft.) | Stratum Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|------------------------------------|---------------------|--|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | | 0-19 | | | | : None/Refer to GZ-314D | 1 | | | | 0-2 CRUSHED STONE | 19.9 | Stand Pipe PVC Riser Bentonite Seal Filter Sand |
| 2 | | | | | | | 2 | | Mod | | | | Well Screen |
| 3 | | | | | | | | | Mod | | | | |
| 4 | | | | | | | | | | Sigt | | FILL | |
| 5 | | | | | | | | | | Sigt | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | Strg | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS
 1 - No sampling completed at this location. See GZ-314D for sampling details. Stratum and impacts descriptions inferred from GZ-314D.
 2 - A groundwater monitoring well of the following construction was installed: 15 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 19 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-4 feet bgs; Filter Sand placed in annulus from 3-19 feet bgs; Bentonite Seals installed from 2-3 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-314S**

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-314S
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---------------------------------------|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | | | | | | | | | Strg | | FILL | -7.9 | |
| 17 | | | | | | | | Strg | | | | | |
| 18 | | | | | | | | Strg | | | | | |
| 19 | | | | | | | | Strg | | | | | |
| 19 | | | | | | | | Sigt | | | | | |
| 20 | | | | | | End of exploration at 19 feet. | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-314S

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-315D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.17
Final Boring Depth (ft.): 30
Date Start - Finish: 5/28/2014 - 6/4/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 6/4/14 | 11:30 | 8.99 | 2 Hrs |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|-------------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Gray brown (10YR, /2) fine to coarse SAND, little Gravel, little Silt, dry, slight oil-like odor | 1 2 3 | 41 | | | CRUSHED STONE | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine to medium SAND, little Silt, little Gravel, little (-) Ash, trace Slag, trace Brick, trace coal, slight oil-odor, moist, oil-like staining | | 38 | | Sigt | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine to medium SAND, little Silt, little Gravel, little (-) Ash, trace Slag, trace Brick, trace coal, slight oil-odor, moist, oil-like staining | | 37 | | Sigt | | |
| 4 | S-4 | 6-8 | 24 | 8 | 6 4 3 4 | S-4 : 0-5" Yellow brown (10YR, 5/6 fine SAND and SILT, trace gravel, slight oil-like odor, wet 5"-8" Black (10YR, 2/1) fine to coarse SAND, some Silt, slight oil-like odor, black oil-like staining, wet | 4 | 102 106 | | Sigt | | |
| 5 | S-5 | 8-10 | 24 | 8 | 3 2 2 3 | S-5 : Loose green gray (GLE Y 1, 10Y) fine SAND, some Silt, moderate oil-like odor, slight sheen, wet, top 2" strong oil-like odor | | 186 | | Sigt | FILL | |
| 6 | S-6 | 10-12 | 24 | 5 | 3 2 2 2 | S-6 : Loose, very dark green gray (GLE Y 1, 3/10Y) fine SAND, some Silt, slight sheen, strong oil-like odor, wet | | 188 | | Strg | | |
| 7 | S-7 | 12-14 | 24 | 11 | 2 1 2 2 | S-7 : Very loose, very dark green gray (GLE Y 1, 3/10Y) fine to medium SAND, some Gravel, some Silt, slight sheen, strong oil-like odor, wet | | 152 | | Strg | | |
| 8 | S-8 | 14-16 | 24 | 13 | 4 3 3 4 | S-8 : 0-7" Very dark green gray (GLE Y 1, 3/10Y) fine to medium SAND, some Gravel, some Silt, slight sheen, strong oil-like odor, wet, oil-like coating (4"-5") | | 90 114 | | | | PVC Riser |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - 2" Crushed stone present at the surface

4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-315D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-315D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK


| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 7 | 2 3 4 7 | 7"-13" Black (10YR, 2/1) fine to coarse SAND, trace Shells, trace Gravel, oil-like coating, strong oil-like odor, wet | | | | Strg | | | |
| 17 | | | | | | S-9 : Loose, black (1-YR, 2/1) fine to coarse SAND, little Gravel, oil-like coated, strong oil-like odor, wet, from 4"-7" color changes to more yellow brown (10YR, 3/4) | | 6.6 | | Strg | FILL | | |
| 18 | S-10 | 18-20 | 24 | 17 | 2 2 1 1 | S-10 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 26 | | | 18 | -7.8 | |
| 19 | | | | | | | 5 | | | Sigt | | | Bentonite Seal |
| 20 | S-11 | 20-22 | 27 | 9 | WOH | S-11 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 20 | | | | | Filter Sand |
| 21 | | | | | | | | | | Sigt | | | |
| 22 | S-12 | 22-24 | 24 | 22 | WOH | S-12 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 1.5 | | | | | |
| 23 | | | | | | | | | | Sigt | | | |
| 24 | S-13 | 24-26 | 24 | 24 | WOH | S-13 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 0.9 | | | ORGANIC SILT | | |
| 25 | | | | | | | | | | Sigt | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 24 | WOH | S-14 : Very soft, very dark green gray (GLEY 1, 4/10Y) ORGANIC SILT, trace Shells, trace fine Sand, trace Wood, wet | | 1.6 | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | WOH | S-15 : Very soft, dark green gray, ORGANIC SILT, trace Shells, 1/8" seam of fine Sand at 18", wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -19.8 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |


REMARKS
5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" diameter, schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19.5-30 feet bgs; Bentonite Seals installed from 18-19.5 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-315D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:30 PM

| | | | | | | | | | |
|--|---------------------|------------|-----------|---|----------------------|------------------------------|-------------------------------|--|--|
| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | | BORING NO. SB-06 Page No. 1 of 3 | |
| Client | Kiewit | | | GS Elev. _____ ft. | | # of SPT Samples 19 | | | |
| Contractor | Geologic | | | Boring Coordinates _____ | | Length of Rock core _____ ft | | | |
| Driller | Ray and Dave | | | | | | | | |
| WAI Rep. | Shawn Ingram (Roux) | | | EQUIPMENT | CASING | SAMPLER | CORE | | |
| DATE | Start | Finish | Type | | Split Spoon | | Total Depth of Boring 101 ft. | | |
| | 7/16/2015 | 7/17/2015 | Size I.D. | 4" | 2" | | | | |
| Boring Location | | | | Hammer Wt. | Hyd. | Hyd | # of Shelby Tubes 3 | | |
| | | | | Hammer Fall | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description | |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | | |
| 5 | SS-1 | 0-2 | 24 | 18 | 6/9/12/11 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light brown. | |
| | SS-2 | 4-6 | 24 | 15 | 5/3/3/2 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light brown. | |
| 10 | SS-3 | 9-10.5 | 18 | 8 | 6/4/5/78 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light brown; Stone/concrete foundation prevented advancing spoon past 10.5 ft. concrete | |
| 15 | SS-4 | 14-16 | 24 | 10 | 7/4/5/4 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; black; petroleum odor. | |
| 20 | SS-5 | 19-21 | 24 | 24 | w.o.h | | ORGANIC SILT | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| | US-1 | 21-23 | 30 | 25 | Push | | | Shelby tube. Undisturbed | |
| 25 | US-2 | 24-26 | 30 | 23 | Push | | | Shelby tube. Undisturbed | |
| | US-3 | 27-29 | 30 | 25 | Push | | | Shelby tube. Undisturbed | |
| 30 | SS-6 | 29-31 | 24 | 24 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| 35 | SS-7 | 34-36 | 24 | 5 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; shell fragment clogged the spoon and impacted recovery; dark gray. | |
| 40 | SS-8 | 39-41 | 24 | 24 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-06 | |

| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | Project Providence LNG | | | | BORING NO. SB-06 | | |
|---|--------------------|-------------------------|----------|----------|----------------------|------------------------|--------------|---|
| | | Project No. 21524028 | | | | Page No. 2 of 3 | | |
| | | Location Providence, RI | | | | | | |
| Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | |
| 45 | SS-9 | 44-46 | 24 | 24 | w.o.h | | ORGANIC SILT | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 50 | SS-10 | 49-51 | 24 | 24 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 55 | SS-11 | 54-56 | 24 | 24 | woh/woh/3/3 | | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 60 | SS-12 | 59-61 | 24 | 24 | woh/12/6/3 | | | 59-60 - SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. 60-60.5 - WIDELY GRADED SAND (SW); ~95% F to M sand; gray 60.5-61 - SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 65 | SS-13 | 64-66 | 24 | 15 | 3/2/5/4 | | | 64-65 - WIDELY GRADED SAND (SW); ~95% F to C sand; gray 65-66 - SILT (ML); ~90% silt; ~10% fine sand; dark brown. |
| 70 | SS-14 | 69-71 | 24 | 6 | 8/6/5/4 | | | WIDELY GRADED SAND (SW); ~95% F to C sand; gray |
| 75 | SS-15 | 74-76 | 24 | 1 | 3/2/3/4 | | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 80 | SS-16 | 80-81 | 24 | 24 | woh/woh/3/4 | | | 70-80 - SILT (ML); ~95% organic silt; black. 80-81 - SILT (ML); ~95% organic silt; dark gray. |
| 85 | SS-17 | 84-86 | 24 | 20 | 6/11/9/12 | | SAND | WIDELY GRADED SAND (SW); ~95% F to M sand; gray |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-06 |

| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|-------|--------------------|------------|----------|-----------|------------------------|--------|---|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 90 | SS-18 | 89-91 | 24 | 0 | 7/7/12/7 | | SAND | No recovery |
| 100 | SS-19 | 99-101 | 24 | 18 | 9/9/14/22 | | | WIDELY GRADED SAND (SW); ~95% F to M sand; light brown. |
| 105 | | | | | | | | BOTTOM OF BORING, 101 FT |
| 110 | | | | | | | | |
| 115 | | | | | | | | |
| 120 | | | | | | | | |
| 125 | | | | | | | | |
| 130 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-06 |

RECORD OF BOREHOLE B-202 (KW-4)

SHEET 2 of 4

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|---|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | -15 | | | OH | | | | | | | |
| 30.0 | -20 | | | | 29.0 | S8 | SS | WOH-2-5-7 | 7 | 2.0 2.0 | Top 14": Dark gray, wet, soft, organic SILT, trace fine sand, (OH). Bottom 10": Dark grayish brown, wet, loose, silty medium to coarse SAND, (SM). Tv=200, 250, 250psf Pp=2000, 1800, 1800psf |
| 35.0 | -25 | | | | 34.0 | S9 | SS | 1-2-1-2 | 3 | 2.0 2.0 | Top 8": Dark gray, wet, soft, organic SILT, trace wood fragments, trace fine sand, trace shell fragments, (OH). Tv=600, 550, 350psf Pp=2500, 2000, 2250psf Bottom 16": Dark gray, wet, soft, sandy SILT, trace wood fragments, trace shell fragments, (ML). |
| 40.0 | -30 | | | | 39.0 | S10 | SS | 3-2-3-3 | 5 | 2.0 2.0 | Dark gray, moist, soft, SILT, trace shell fragments, (ML). Tv=350, 650, 300psf Pp=2000, 1700, 2000psf |
| 45.0 | -35 | | | | 41.0 | S11 | VANE | 4-2-3-3 | 5 | 1.5 2.0 | Dark gray, moist, soft, clayey SILT, trace fine sand, trace shell fragments, (MH). Tv=300, 360, 200psf Pp=1000, 1000, 1000psf PID=0.6ppm V3: (41.5-42) Su = 350 psf; Remolded Su = 183 psf V4: (42.5-43) Su = 200 psf; Remolded Su = 50 psf |
| 50.0 | | | | | 49.0 | S12 | SS | 4-3-3-3 | 6 | 2.0 2.0 | Dark gray, moist, soft, organic SILT, trace wood, trace shell fragments, (OH). Tv=480, 400, 450psf, Pp=2500, 2600, 3000psf PID=0.6ppm |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 3 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|-------------------|--------------------------------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | -40 | | | | | S12 | SS | 4-3-3-3 | 6 | <u>2.0</u> 2.0 | |
| | | | | | 54.0 | S13 | SS | 2-2-2-3 | 4 | <u>2.0</u> 2.0 | Dark gray, moist, soft, organic SILT, trace wood fragments, trace shell fragments, (OH). Tv=350, 300, 400psf Pp=2500, 2500, 2500psf |
| 55.0 | -45 | | | | 56.0 | S14 | VANE | WOP-WOP-WOP-WOP | 0 | <u>1.5</u> 2.0 | Dark gray, moist, very soft, organic SILT, trace wood fragments, trace roots, trace shell fragments, (OH). Tv=100, 250, 200psf Pp=2000, 1500, 1000psf V5: (56.5-57) Su = 1801 psf; Remolded Su = 995 psf V6: (57.5-58) Su = 2844 psf; Remolded Su = 1801 psf |
| | | | OH | | 59.0 | S15 | SS | 2-3-4-6 | 7 | <u>2.0</u> 2.0 | Dark gray, moist, medium stiff, organic SILT, trace wood fragments, trace roots, trace fine sand, (OH). Tv=240, 320, 300psf Pp=2000, 3200, 3500psf |
| | | | | | 64.0 | S16 | SS | 7-9-9-9 | 18 | <u>1.7</u> 2.0 | Top 5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace roots, trace fine sand, (OH). Tv=250, 200, 200psf Pp=2500, 2000, 2000psf Middle 10.5": Dark gray, wet, loose, silty fine to coarse SAND, (SM). Bottom 3.5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace fine sand, (OH). Pp=3000, 2500, 3500psf |
| | | | | | 69.0 | S17 | SS | 13-18-17-14 | 35 | <u>0.7</u> 2.0 | Dark gray, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SP). |
| 70.0 | -60 | 69.0 - 81.0ft Dark gray, fine to coarse SAND to silty fine to medium SAND, trace gravel (outwash). | SP | | | | | | | | |
| | | | | 74.0 | | SS | 14-17-14-12 | 31 | <u>0.0</u> 2.0 | NO RECOVERY. Piece of gravel in tip. | |
| 75.0 | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHS)
 USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 4 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|------------------|--------------------|--------|-------------|----------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | -65 | | | [Dotted pattern] | | | SS | 14-17-14-12 | 31 | 0.0 2.0 | |
| 80.0 | | | SP | | 79.0 | S18 | SS | 15-12-11-8 | 23 | 1.5 2.0 | Dark gray, wet, medium dense, silty fine to medium SAND, trace gravel, (SM). |

Boring completed at 81.0 ft

- Notes:**
 1. Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

| | | |
|--------------------|---|------------------------------|
| Fill (made ground) | USCS High Plasticity Organic silt or clay with shells (OHS) | USCS Poorly-graded Sand (SP) |
|--------------------|---|------------------------------|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



RECORD OF BOREHOLE B-203 (KW-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

SHEET 1 of 4
 INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|--|-------------|----------------|-------------------|--|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 24.0ft Gray to black, fine to coarse SAND to silty SAND, trace gravel (FILL). | SM | | 0.0 | S1 | SS | 18-18-15-17 | 33 | 1.6 2.0 | Top 10": Grayish light brown, frozen, dense, fine to coarse SAND, trace gravel, trace silt (SW). Bottom 9": Dark brown, moist, dense, fine to medium SAND, little silt, (SM). N value may not be representative of in situ density/ consistency, due to frozen soil. |
| 4.0 | S2 | | | | SS | 24-10-12-11 | 22 | 0.9 2.0 | Top 5.5": Black, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP). Bottom 5": Light gray, moist, medium dense, fine to medium SAND, trace gravel, (SP). | | |
| 9.0 | | | | | | | | | NO RECOVERY. | | |
| 14.0 | S3 | | | | SS | 11-8-6-13 | 14 | 0.0 2.0 | | | |
| 19.0 | S4 | | | | SS | 22-10-6-4 | 16 | 0.8 2.0 | Top 5": Light gray, moist, medium dense, silty fine SAND, trace concrete, trace gravel, (SM). PID=74.6ppm Bottom 5": Dark gray to black, wet, medium dense, fine to coarse SAND, trace gravel, trace silt (SW). Strong hydrocarbon odor and visible sheen. PID=702ppm | | |
| 24.0 | S5 | | | | SS | 11-4-3-3 | 7 | 0.6 2.0 | Black, wet, loose, fine to coarse SAND, some fine gravel, (SW). Strong hydrocarbon odor and visible sheen. PID=78.1ppm | | |
| 24.0 | | | | | | | | | | | |
| 25.0 | | | | | 24.0 - 54.0ft Dark gray, organic SILT, trace fine sand, trace shells. | OH | | 24.0 | | | |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHSH)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-203 (KW-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

SHEET 2 of 4
 INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|---------------------|---|------------|---|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | OH | | S5 | SS | 9-2-2-2 | 4 | 0.7 2.0 | V2: (25.5-26) Su = 1043 psf; Remolded Su = NA | |
| | | | | | 26.0 | S6 | VANE | WOP-WOP- WOP-WOP | | 0 | 1.6 2.0 | Top 9": Dark gray, wet, very soft, organic SILT, little fine to coarse sand, trace gravel, (OH). Bottom 10": Dark gray, moist, very soft, organic SILT, trace fine sand, (OH). |
| | | | | | 29.0 | S7 | SS | 1-1-3-2 | | 4 | 1.6 2.0 | Dark gray, moist, soft, organic SILT, trace fine sand, trace shell fragments, (OH). Tv=300, 300, 250psf Pp=2000, 1500, 1800psf |
| 30.0 | -20 | | | | 31.0 | S8 | VANE | WOP-WOP- WOP-WOP | | 0 | 1.5 2.0 | Dark gray, wet, very soft, organic SILT, trace fine sand, trace shell fragments, (OH). Tv=100, 250, 150psf Pp=2000, 1000, 1500psf V3: (31.5-32) Su = 853 psf; Remolded Su = 758 psf V4: (32.5-33) Su = 1042 psf; Remolded Su = 664 psf |
| | | | | | 34.0 | S9 | SS | 1-2-3-2 | | 5 | 0.5 2.0 | Dark gray, wet, medium stiff, organic SILT, trace fine to medium sand, trace shell fragments, (OH). Pp=1000, 1500, 1000psf |
| 35.0 | -25 | | | | 39.0 | S10 | SS | 1-1-1-2 | | 2 | 0.3 2.0 | Dark gray, wet, soft, organic SILT, some clay, trace fine sand, trace shell fragments, (OH). Pp=1000, 1000, 1000psf |
| | | | | | 44.0 | S11 | SS | 1-2-3-4 | | 5 | 1.4 2.0 | Dark gray, moist, medium stiff, organic SILT, trace fine sand, (OH). Tv=200, 150, 200psf Pp=1500, 1500, 1000psf |
| 45.0 | -35 | | | | 49.0 | S12 | SS | 7-11-11-11 | | 22 | 0.4 2.0 | Black, wet, medium dense, silty fine to medium SAND, some organics (wood fragments, roots), (SM). PID=9.0ppm |
| 50.0 | -40 | | | | | | | | | | | |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-203 (KW-6)

SHEET 3 of 4

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | OH | [Wavy pattern] | | S12 | SS | 7-11-11-11 | 22 | 0.4 2.0 | |
| 55.0 | -45 | 54.0 - 91.0ft Gray, fine to coarse SAND to silty SAND, trace to some gravel, (Outwash). | | [Dotted pattern] | 54.0 | S13 | SS | 22-26-32-40 | 58 | 0.7 2.0 | Top 2.5": Dark gray, wet, very dense, fine to medium SAND, (SP). Middle 2.5": Dark gray, wet, very dense, GRAVEL, trace medium to coarse sand, (GP). Bottom 3": Dark brown, wet, very dense, GRAVEL, trace organics, trace fine to coarse sand, trace silt, (GP). |
| 60.0 | -50 | | | | 59.0 | S14 | SS | 17-9-11-12 | 20 | 0.3 2.0 | Brownish gray, wet, medium dense, fine to coarse SAND, some gravel, some silt, (SM). |
| 65.0 | -55 | | SM | | 64.0 | S15 | SS | 20-8-7-9 | 15 | 0.6 2.0 | Gray, wet, medium dense, fine to coarse SAND, little gravel, trace silt, (SP). |
| 70.0 | -60 | | | | 69.0 | S16 | SS | 14-14-6-4 | 20 | 0.9 2.0 | Dark gray, moist, very stiff, medium to coarse sandy SILT, trace fine gravel, (ML). |
| 75.0 | -65 | | | | 74.0 | S17 | SS | 27-17-17-18 | 34 | 0.8 2.0 | Gray, wet, dense, fine to coarse SAND, little silt, trace gravel, (SM). |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-203 (KW-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

SHEET 4 of 4
 INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | | | | | | S17 | SS | 27-17-17-18 | 34 | $\frac{0.8}{2.0}$ | |
| 80.0 | -70 | | | | 79.0 | S18 | SS | 38-11-7-7 | 18 | $\frac{0.6}{2.0}$ | Gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). Driller noted possible cobbles. |
| 85.0 | -75 | | SM | | | | | | | | |
| 90.0 | -80 | | | | 89.0 | S19 | SS | 15-13-18-28 | 31 | $\frac{0.5}{2.0}$ | Gray, wet, medium dense, fine to coarse SAND, some silt, little gravel, (SM). |

Boring completed at 91.0 ft

- Notes:**
 1. Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHS)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



RECORD OF BOREHOLE B-204 (KW-10)

SHEET 1 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 14.0ft Brown to black, fine to coarse SAND, some to little gravel, some silt (FILL). | | SP | 0.0 | S1 | SS | 15-8-7-6 | 15 | $\frac{1.1}{2.0}$ | Brown, moist (frozen), medium dense, GRAVEL, some fine to coarse sand, some silt, (GM). N value may not be representative of in situ density/ consistency, due to frozen soil. |
| 4.0 | | | | | 4.0 | S2 | SS | 14-5-5-12 | 10 | $\frac{0.4}{2.0}$ | Black, wet, loose, fine to coarse SAND, little gravel, trace asphalt, some silt, (SP). |
| 9.0 | | | | | 9.0 | S3 | SS | 9-8-8-11 | 16 | $\frac{0.9}{2.0}$ | Top 3": Brown, moist, medium dense, silty fine SAND, little gravel, (SM). Bottom 8": Black, wet, medium dense, fine to coarse SAND, some gravel, (SP). Strong hydrocarbon odor and visible sheen. PID=5.4ppm |
| 14.0 | -5 | 14.0 - 55.5ft Dark brown, organic SILT, some to trace fine sand, trace shells, and wood fragments. | | OH | 14.0 | S4 | SS | 5-12-10-9 | 22 | $\frac{1.3}{2.0}$ | Top 4": Brown, wet, very stiff, organic SILT, trace fine sand, (OH). Bottom 11": Brownish gray, moist, fine to medium SAND, little gravel, trace wood fragments, (SP). Strong hydrocarbon odor and visible sheen. PID=12ppm |
| 19.0 | | | | | 19.0 | S5 | VANE | WOH-1-1-1 | 2 | $\frac{0.3}{2.0}$ | Dark gray, wet, soft, organic SILT, little wood fragments, trace fine sand, (OH). Hydrocarbon odor. Tv=150, 200, 200psf Pp=1000, 1000, 1500psf V1: (19.5-20) Su = 711 psf; Remolded Su = 332 psf V2: (20.5-21) Su = 1138 psf; Remolded Su = 948 psf |
| 22.0 | | | | | 22.0 | S6 | SS | WOP-WOP-WOP-WOP | 0 | $\frac{1.5}{2.0}$ | Dark brown, wet, very soft, organic SILT, some fine sand, (OH). Strong "rotting egg" odor. Tv=250, 300, 250psf Pp=1500, 2000, 2000psf |
| 24.0 | | | | | 24.0 | S7 | SS | 4-3-4-4 | 7 | $\frac{2.0}{2.0}$ | Top 12": Dark brown, wet, medium stiff, organic SILT, little gravel, (OH). Bottom 12": Dark brown, moist, medium stiff, organic SILT, trace wood fragments, trace fine sand, (OH). Tv=250, 200, 250psf Pp=2000, 2000, |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHS)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)

SHEET 2 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|---------------------|----|-------------------|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | OH | | S7 | SS | 4-3-4-4 | 7 | $\frac{2.0}{2.0}$ | 2000psf | |
| | | | | | 29.0 | S8 | SS | 1-WOH-1-2 | 1 | $\frac{1.5}{2.0}$ | Dark brown, moist, very soft, organic SILT, trace shell fragments, trace fine sand, (OH). Tv=100, 150, 150psf Pp=1000, 1000, 1000psf | |
| 30.0 | -20 | | | | 31.0 | S9 | VANE | WOP-WOP- WOP-WOP | 0 | $\frac{1.6}{2.0}$ | Dark gray, moist, very soft, organic SILT, some fine sand, trace wood fragments, (OH). Tv=100, 100, 100psf Pp=100, 100, 100psf V3: (31.5-32) Su = 1090 psf; Remolded Su = 568 psf V4: (32.5-33) Su = 1422 psf; Remolded Su = 1327 psf | |
| | | | | | 33.0 | S10 | SS | 2-2-2-2 | 4 | $\frac{1.7}{2.0}$ | Top 8": Dark brown, wet, soft, organic SILT, some fine to coarse sand, trace gravel, trace wood fragments, (OH). Tv= 100, 100, 100psf Pp=100, 100, 100psf Bottom 12": Dark gray, moist, soft, organic SILT, trace gravel, trace fine to medium sand, (OH). Tv=250, 200, 250psf Pp=2000, 2500, 2000psf | |
| 35.0 | -25 | | | | | | | | | | | |
| | | | | | 39.0 | S11 | SS | 7-8-9-10 | 17 | $\frac{1.3}{2.0}$ | Dark gray, moist, medium dense, silty fine to medium SAND, trace gravel, (SM). Hydrocarbon odor and visible sheen. PID=0.5ppm | |
| 40.0 | -30 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 45.0 | -35 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 50.0 | -40 | | | | | | | | | | | |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)

SHEET 3 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | OH | | | | | | | | |
| 55.0 | -45 | 55.5 - 101.0ft Gray, silty fine to coarse SAND, trace to some gravel (outwash). | | | 54.0 | S12 | SS | 8-24-22-21 | 46 | 2.0 2.0 | Top 14": Black, moist, hard, organic SILT, little wood fragments, trace gravel, (OL). Tv=450, 400, 400psf Pp=3000, 3500, 3000psf Middle 4": Dark brownish gray, moist, hard, fine to medium sandy SILT, (ML). Tv=150, 200, 150psf Pp=1000, 1000, 1500psf Bottom 6": Gray, wet, dense, fine to coarse SAND, trace gravel, (SP). |
| 60.0 | -50 | | | | 59.0 | S13 | SS | 8-14-14-13 | 28 | 0.8 2.0 | Gray, wet, medium dense, silty fine to medium SAND, trace gravel, (SM). |
| 65.0 | -55 | | SM | | 64.0 | S14 | SS | 9-14-15-16 | 29 | 1.2 2.0 | Gray, wet, medium dense, silty fine SAND, (SM). |
| 70.0 | -60 | | | | 69.0 | S15 | SS | 12-12-13-13 | 25 | 1.3 2.0 | Gray, wet, medium dense, fine SAND, trace gravel, trace silt, (SP). |
| 75.0 | -65 | | | | 74.0 | S16 | SS | 20-14-13-12 | 27 | 0.5 2.0 | Gray, wet, medium dense, silty fine to coarse SAND, trace gravel, (SM). |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)

SHEET 4 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | | | | [Dotted pattern] | | S16 | SS | 20-14-13-12 | 27 | 0.5 2.0 | |
| 80.0 | -70 | | | [Dotted pattern] | 79.0 | S17 | SS | 11-16-13-20 | 29 | 0.5 2.0 | Gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). |
| 85.0 | -75 | | | [Dotted pattern] | 84.0 | S18 | SS | 50/2" | R | 0.2 0.2 | Dark gray, wet, very dense, GRAVEL, trace fine to coarse sand, (GP). |
| 90.0 | -80 | | SM | [Dotted pattern] | 89.0 | S19 | SS | 19-15-15-13 | 30 | 0.2 2.0 | Gray, wet, very stiff, fine to coarse sandy SILT, little gravel, (ML). |
| 95.0 | -85 | | | [Dotted pattern] | | | | | | | |
| 100.0 | -90 | | | [Dotted pattern] | 99.0 | S20 | SS | 6-4-6-10 | 10 | 0.0 2.0 | No recovery; resampled (recovery 0.5'/2.0'). Gray, wet, loose, fine to coarse SAND, some gravel, trace silt, (SP). |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)


SHEET 5 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30




| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|-------------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 100.0 | | | SM |  | | S20 | SS | 6-4-6-10 | 10 | <u>0.0</u> 2.0 | |

Boring completed at 101.0 ft

Notes:

- Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDBER NH 2011.GDT 5/10/16

| | | | |
|--|---|--|--|
|  Fill (made ground) |  USCS High Plasticity Organic silt or clay with shells (OHS) |  USCS Silty Sand (SM) | |
|--|---|--|--|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



TABLE T-1 - SUBSURFACE SOIL DATA

COVE AREA DATA GAP

642 Allens Ave
Providence, Rhode Island

| | RIDEM (I/C DEC) | RIDEM GB Leachability Criteria | RIDEM Upper Concentration Limit (UCL) | Units | RCA-3 | | RCA-4 | | RCA-5 | | RCA-R10 | RHB-1 | | | | | RHB-2 | | | | RHB-3 | | | | RHB-6 | | | | B7 | B8 | B9 | |
|--|-----------------|--------------------------------|---------------------------------------|-------|----------------|--------------|----------------|-------------|----------------|------------|----------|----------------|----------|----------|----------|------------|----------------|----------|----------|----------|----------------|----------|----------|----------|-----------|-------------|-------------|------------|----------|----------|----------|----------|
| | | | | | September 1994 | | September 1994 | | September 1994 | | May 1996 | September 1998 | | | | | September 1998 | | | | September 1998 | | | | 1/27/2000 | 1/27/2000 | 1/27/2000 | | | | | |
| | | | | | 6 - 8 FT | 8 - 10 FT | 8 - 10 FT | | 10 - 12 FT | 14 - 16 FT | 0 - 2 FT | 1 - 2 FT | 2 - 4 FT | 4 - 6 FT | 6 - 8 FT | 8 - 10 FT | 0 - 2 FT | 2 - 4 FT | 4 - 6 FT | 6 - 8 FT | 0 - 2 FT | 2 - 4 FT | 4 - 6 FT | 6 - 8 FT | 1 - 3 FT | 3 - 5 FT | 5 - 7 FT | 7 - 9 FT | 4 - 6 FT | 4 - 6 FT | 0 - 2 FT | 2 - 4 FT |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-Nitroaniline | NE | NE | 10,000 | mg/kg | NA | NA | 11.7 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | R |
| m-Nitrosodiphenylamine | NE | NE | 10,000 | mg/kg | NA | NA | 15.4 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | R | |
| Phenol | 10,000 | NE | 10,000 | mg/kg | ND | 68.8 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | ND | 37.1 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| 2,4 Dimethylphenol | NE | NE | 10,000 | mg/kg | ND | 25.3 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| 2-Methylnaphthalene | 10,000 | NE | 10,000 | mg/kg | ND | 238 | ND | ND | 37.8 | NA | ND | ND | ND | 0.28 | ND | ND | 15 | 9.9 | ND | ND | ND | 8.6 | ND | 0.52 | 8.7 | 43 | R | R | ND | R | | |
| Acenaphthene | 10,000 | NE | 10,000 | mg/kg | 3.3 | 72.1 | 100 | 9.1 | 105 | NA | ND | ND | ND | ND | ND | ND | 5.3 | 3 | ND | ND | ND | 2 | ND | ND | 1.5 | 4.2 | R | 1.6 | ND | R | | |
| Acenaphthylene | 10,000 | NE | 10,000 | mg/kg | 6.3 | ND | 25.2 | 39.9 | 11.3 | NA | ND | ND | ND | ND | ND | 0.72 | 0.62 | ND | ND | ND | ND | ND | 0.26 | ND | ND | R | R | ND | R | | | |
| Anthracene | 10,000 | NE | 10,000 | mg/kg | 3.8 | 30.5 | 79.7 | 76.3 | 34.7 | NA | ND | ND | ND | ND | ND | 2.5 | 1.8 | ND | ND | ND | 0.69 | ND | 0.29 | 0.62 | 1.7 | R | R | 0.39 | R | | | |
| Benzo [a] Anthracene | 7.8 | NE | 10,000 | mg/kg | ND | ND | 28.5 | 32.2 | 12.2 | NA | ND | ND | ND | ND | ND | 2.4 | 1.4 | ND | ND | ND | 0.28 | ND | ND | ND | 0.58 | R | R | 1.4 | R | | | |
| Benzo [a] Pyrene | 0.8 | NE | 10,000 | mg/kg | ND | ND | 14.8 | 14.4 | 8.1 | NA | ND | ND | ND | ND | ND | 1.8 | 96 | ND | ND | ND | ND | ND | ND | ND | 0.42 | R | R | 1.1 | R | | | |
| Benzo [b] Fluoranthene | 7.8 | NE | 10,000 | mg/kg | ND | ND | 21.2 | 24.7 | 6.5 | NA | ND | ND | ND | ND | ND | 1.1 | 0.76 | ND | ND | ND | ND | ND | ND | ND | 0.32 | R | R | 1.7 | R | | | |
| Benzo [g,h,i] Perylene | 10,000 | NE | 10,000 | mg/kg | ND | ND | 6 | 6 | ND | NA | ND | ND | ND | ND | ND | 0.48 | 0.23 | ND | ND | ND | ND | ND | ND | ND | ND | R | R | ND | R | | | |
| Benzo [k] Fluoranthene | 78 | NE | 10,000 | mg/kg | ND | ND | 7.6 | 10.9 | ND | NA | ND | ND | ND | ND | ND | 0.48 | 0.24 | ND | ND | ND | ND | ND | ND | ND | ND | R | R | 1.2 | R | | | |
| Bis [2-Chloroethyl]ether | 410 | NE | 10,000 | mg/kg | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | R | R | ND | R | | | |
| Carbazole | NE | NE | 10,000 | mg/kg | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | R | R | ND | R | | | |
| Chrysene | 780 | NE | 10,000 | mg/kg | ND | ND | 24.4 | 30.4 | 11.2 | NA | 0.22 | ND | ND | 22 | ND | ND | 2.2 | 1.4 | ND | ND | ND | 0.26 | ND | ND | ND | 0.51 | R | R | 1.4 | R | | |
| Dibenzo [a,h] Anthracene | 0.8 | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | 0.14 | 0.087 | ND | ND | ND | ND | ND | ND | ND | ND | R | R | ND | R | | | |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | NA | NA | ND | NA | NA | NA | ND | ND | ND | ND | ND | 1.7 | 1 | ND | ND | ND | 0.48 | ND | ND | 0.77 | 2.3 | R | R | ND | R | | | |
| Fluoranthene | 10,000 | NE | 10,000 | mg/kg | ND | ND | 65.4 | 64.4 | 23.6 | NA | ND | ND | ND | ND | ND | 2.2 | 1.5 | ND | ND | ND | 0.5 | ND | 0.41 | 0.45 | 1.6 | R | 0.48 | 2.5 | 0.57 | | | |
| Fluorene | 10,000 | NE | 10,000 | mg/kg | ND | 40.4 | 12.6 | 68.5 | 11.8 | NA | ND | ND | ND | ND | ND | 5.1 | ND | ND | ND | ND | 1.4 | ND | 0.36 | 1.5 | 4 | R | 1.2 | ND | R | | | |
| Indeno [1,2,3-cd] Pyrene | 7.8 | NE | 10,000 | mg/kg | ND | ND | 5 | 6.1 | ND | NA | ND | ND | ND | ND | ND | 0.45 | 0.23 | ND | ND | ND | ND | ND | ND | ND | ND | R | R | ND | R | | | |
| Naphthalene | 10,000 | NE | 10,000 | mg/kg | ND | ND | 172 | ND | 144 | NA | 0.22 | ND | ND | 0.25 | 0.32 | ND | ND | ND | ND | ND | 9.2 | ND | 0.29 | 4.8 | 46 | R | R | ND | R | | | |
| Phenanthrene | 10,000 | NE | 10,000 | mg/kg | 14.1 | 96.5 | 169 | 169 | 106 | NA | ND | ND | ND | 0.38 | 0.25 | ND | ND | 12 | 7.4 | ND | ND | 3 | ND | 1.3 | 3 | 7.7 | 0.49 | 3.1 | 1.7 | 0.97 | | |
| Pyrene | 10,000 | NE | 10,000 | mg/kg | 6.1 | 40.4 | 126 | 132 | 55.3 | NA | 0.27 | ND | ND | ND | ND | 5.4 | 2.6 | ND | ND | ND | 0.73 | ND | 0.52 | 0.46 | 1.5 | R | 0.92 | 2.8 | 0.63 | | | |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TPH | 2,500 | 2,500 | 30,000 | mg/kg | NA | 11100 | 7690 | NA | 6250 | 281 | ND | ND | ND | ND | ND | NA | 950 | 1500 | ND | ND | ND | 1100 | ND | 110 | 850 | 2500 | 3200 | ND | ND | 1800 | | |
| TPH (gasoline range) | 2,500 | 2,500 | 30,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | |
| TPH (diesel range) | 2,500 | 2,500 | 30,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Cyanide | 10,000 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.31 | 0.29 | 0.64 | 0.71 | | |
| Antimony | 820 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| Arsenic | 7 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3.1 | NA | | |
| Barium | 10,000 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | 42 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 29.9 | NA | | |
| Beryllium | 1.5 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.27 | NA | | | |
| Cadmium | 1,000 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.44 | NA | | | |
| Chromium | 10,000 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 13.1 | NA | | | |
| Copper | 10,000 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 46.7 | NA | | | |
| Iron | NE | NE | NE | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 12700 | 13600 | 11800 | 16400 | | |
| Lead | 500 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | 117 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 27.4 | NA | | | |
| Mercury | 610 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.12 | NA | | | |
| Nickel | 10,000 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 25.5 | NA | | | |
| Selenium | 10,000 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3.2 | NA | | | |
| Silver | 10,000 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 2.4 | NA | | | |
| Zinc | 10,000 | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 97.4 | NA | | | |

Notes:
 ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

TABLE T-1 - SUBSURFACE SOIL DATA

COVE AREA DATA GAP

642 Allens Ave

Providence, Rhode Island

| | RIDEM (I/C DEC) | RIDEM GB Leachability Criteria | RIDEM Upper Concentration Limit (UCL) | Units | RCA-3 | | RCA-4 | | RCA-5 | | RCA-R10 | RHB-1 | | | | | RHB-2 | | | | RHB-3 | | | | RHB-6 | | | | B7 | B8 | B9 | |
|---|-----------------|--------------------------------|---------------------------------------|-------|----------------|-----------|----------------|------|----------------|------------|----------|----------------|----------|----------|----------|-----------|----------------|----------|----------|----------|----------------|----------|----------|----------|----------------|----------|----------|----------|-----------|-----------|-----------|----------|
| | | | | | September 1994 | | September 1994 | | September 1994 | | May 1996 | September 1998 | | | | | September 1998 | | | | September 1998 | | | | September 1998 | | | | 1/27/2000 | 1/27/2000 | 1/27/2000 | |
| | | | | | 6 - 8 FT | 8 - 10 FT | 8 - 10 FT | | 10 - 12 FT | 14 - 16 FT | 0 - 2 FT | 1 - 2 FT | 2 - 4 FT | 4 - 6 FT | 6 - 8 FT | 8 - 10 FT | 0 - 2 FT | 2 - 4 FT | 4 - 6 FT | 6 - 8 FT | 0 - 2 FT | 2 - 4 FT | 4 - 6 FT | 6 - 8 FT | 1 - 3 FT | 3 - 5 FT | 5 - 7 FT | 7 - 9 FT | 4 - 6 FT | 4 - 6 FT | 0 - 2 FT | 2 - 4 FT |
| Volatiles Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4 Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| 1,3,5 Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| Benzene | 200 | 4.3 | 10,000 | mg/kg | ND | ND | ND | ND | 0.96 | ND | 0.02 | 0.019 | 0.033 | 0.015 | 0.1 | 0.003 | ND | ND | 0.6 | 0.001 | 0.006 | 0.24 | 0.12 | ND | 0.002 | 0.11 | 0.55 | ND | ND | ND | ND | |
| Ethylbenzene | 10,000 | 62 | 10,000 | mg/kg | ND | ND | 35.4 | 0.47 | 13 | ND | 0.004 | 0.003 | ND | 0.001 | 0.016 | ND | 0.0011 | 10 | 17 | ND | ND | 11 | 0.62 | ND | 0.002 | 0.42 | 0.3 | ND | ND | ND | ND | |
| Isopropylbenzene | 10,000 | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| Methylene Chloride | 760 | NE | 10,000 | mg/kg | ND | ND | 28 | ND | ND | 0.007 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| Naphthalene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.71 | ND | ND | ND | |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| sec-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.26 | ND | ND | ND | |
| Styrene | 190 | 64 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| tert-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| Toluene | 10,000 | 62 | 10,000 | mg/kg | ND | 0.8 | 13.5 | 0.19 | 2.47 | ND | 0.017 | 0.01 | 0.001 | 0.006 | 0.016 | 0.002 | ND | ND | ND | ND | 0.003 | ND | ND | ND | 0.001 | 0.019 | ND | ND | ND | ND | ND | |
| Total Xylenes | 10,000 | NE | 10,000 | mg/kg | 0.04 | 9.1 | 53.4 | 0.8 | 22.7 | ND | 0.018 | 0.012 | ND | 0.007 | 0.034 | ND | ND | 9.3 | 4.9 | ND | 0.005 | 9.2 | 0.51 | ND | 0.007 | 0.23 | 0.11 | ND | ND | ND | ND | |
| Pesticides and Poly-Chlorinated Biphenyls (PCBs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor-1242 | 10 | 10 | 10,000 | mg/kg | ND | ND | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| 4-DDT | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| Endrin | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| Gamma-Chlordane | NE | NE | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.012 | NA | |

Notes:
 ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable

While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC
Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria
 Red text indicates an exceedance of RIDEM GB Upper Concentration Limits
 1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

TABLE T-1 - SUBSURFACE SOIL DATA

COVE AREA DATA GAP

642 Allens Ave
Providence, Rhode Island

| | RIDEM (I/C DEC) | RIDEM GB Leachability Criteria | RIDEM Upper Concentration Limit (UCL) | Units | B17 | | B18 | | B20 | | B21 | | B22 | | B23 | | B24 | B24 | B25 | B26 | D94 | VHB-4 | TP-1 | TP-6 | GZ-313D | GZ-314D | GZ-315D |
|--|-----------------|--------------------------------|---------------------------------------|-------|-------------|-----------|------------|------------|-----------|-------------|-------------|------------|----------|----------|----------|------------|-------------|-----------|------------|-----------|------------|-------------|--------------|--------------|-------------|-------------|-------------|
| | | | | | 1/31/2000 | 1/27/2000 | 1/31/2000 | 1/31/2000 | 1/31/2000 | 1/31/2000 | 1/31/2000 | 1/31/2000 | 2/1/2000 | 2/1/2000 | 2/1/2000 | 2/3/2000 | 4 - 6 FT | 1/14/2002 | 5/20/2002 | 5/20/2002 | 05/19/2014 | 05/27/2014 | 05/28/2014 | | | | |
| | | | | | 0 - 2 FT | 4 - 6 FT | 4 - 6 FT | 0 - 2 FT | 4 - 6 FT | 0 - 2 FT | 4 - 6 FT | 0 - 2 FT | 4 - 6 FT | 0 - 2 FT | 4 - 6 FT | 0 - 2 FT | 6 - 8 FT | 4 - 6 FT | 4 - 6 FT | 1/28/2000 | 8 - 10 FT | >2 FT | >2 FT | 4 - 6 FT | 4 - 6 FT | 4 - 6 FT | |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-Nitroaniline | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | NA |
| m-Nitrosodiphenylamine | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | NA |
| Phenol | 10,000 | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | NA |
| 2-Methylphenol | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | NA |
| 2,4 Dimethylphenol | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | NA |
| 2-Methylnaphthalene | 10,000 | NE | 10,000 | mg/kg | ND | ND | 0.89 | ND | ND | 3.8 | ND | 0.58 | ND | ND | ND | 1.1 | 1.9 | ND | ND | ND | ND | ND | 26.1 | ND | 141 | 10.5 | |
| Acenaphthene | 10,000 | NE | 10,000 | mg/kg | ND | ND | ND | ND | 1.5 | ND | 17 | ND | ND | ND | ND | ND | ND | ND | 0.6 | ND | ND | 3.23 | 19.1 | ND | 36.1 | ND | |
| Acenaphthylene | 10,000 | NE | 10,000 | mg/kg | 0.87 | ND | 2.7 | 1.7 | ND | 33 | 11 | 8.2 | ND | ND | ND | 3.4 | 8.2 | 0.35 | ND | ND | ND | ND | ND | ND | 8.01 | 55.2 | |
| Anthracene | 10,000 | NE | 10,000 | mg/kg | ND | ND | 1.2 | 0.51 | 0.61 | 8.9 | 18 | 2.5 | ND | ND | ND | 1.3 | 4.2 | 1 | ND | ND | 8.4 | ND | 11.2 | ND | 25.9 | 15.2 | |
| Benzo [a] Anthracene | 7.8 | NE | 10,000 | mg/kg | 2.7 | ND | 6.8 | 3 | ND | 21 | 10 | 15 | ND | ND | ND | 1 | 4.9 | 16 | 1.9 | ND | 4.4 | ND | 5.94 | ND | 14.1 | 22.3 | |
| Benzo [a] Pyrene | 0.8 | NE | 10,000 | mg/kg | 2.1 | ND | 5.2 | 2.6 | ND | 32 | 6.5 | 14 | ND | ND | ND | 1.2 | 6.2 | 27 | 1.7 | ND | 3 | ND | 4.29 | ND | 10.7 | 43.3 | |
| Benzo [b] Fluoranthene | 7.8 | NE | 10,000 | mg/kg | 3.6 | ND | 8.4 | 3.8 | ND | 50 | 5.1 | 16 | ND | ND | ND | 1.4 | 6.5 | 25 | 2.5 | ND | 2.4 | ND | 4.62 | ND | 7.49 | 57.6 | |
| Benzo [g,h,i] Perylene | 10,000 | NE | 10,000 | mg/kg | ND | ND | 3.5 | 1.6 | ND | 26 | ND | 6.9 | ND | ND | ND | 0.75 | 4.4 | 23 | 1.3 | ND | ND | ND | ND | ND | 2.95 | 20.1 | |
| Benzo [k] Fluoranthene | 78 | NE | 10,000 | mg/kg | 1.8 | ND | 2.7 | 1.7 | ND | ND | 2.5 | 6.5 | ND | ND | ND | 0.81 | 2.6 | 11 | 0.7 | ND | ND | ND | 5.25 | ND | 3.02 | 22.7 | |
| Bis [2-Chloroethyl]ether | 410 | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.36 | ND | ND | ND | ND | ND | ND | ND | NA | NA | NA | |
| Carbazole | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | 0.84 | ND | ND | ND | ND | ND | ND | ND | 0.46 | ND | ND | ND | ND | ND | NA | NA | NA | |
| Chrysene | 780 | NE | 10,000 | mg/kg | 3.9 | ND | 7.3 | 3.6 | ND | 28 | 11 | 16 | ND | ND | ND | 1.2 | 5.2 | 19 | 2 | ND | 4.4 | ND | ND | ND | 12.5 | 28 | |
| Dibenzo [a,h] Anthracene | 0.8 | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | 7.8 | ND | 1.9 | ND | ND | ND | ND | 0.99 | 3 | ND | ND | ND | ND | ND | ND | ND | 6.37 | |
| Dibenzofuran | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.37 | ND | ND | ND | ND | ND | NA | NA | NA | |
| Fluoranthene | 10,000 | NE | 10,000 | mg/kg | 2.8 | ND | 12 | 3.5 | 0.52 | 21 | 13 | 18 | ND | ND | ND | 1.3 | 4.6 | 15 | 4 | ND | 6.7 | ND | 12.9 | ND | 27.7 | 26.9 | |
| Fluorene | 10,000 | NE | 10,000 | mg/kg | ND | ND | 0.6 | ND | 1.7 | ND | 34 | ND | ND | ND | ND | 1 | ND | 0.72 | ND | ND | ND | ND | 16.5 | ND | 24.6 | 6.32 | |
| Indeno [1,2,3-cd] Pyrene | 7.8 | NE | 10,000 | mg/kg | 0.91 | ND | 3.2 | 1.6 | ND | 27 | 1.3 | 6.7 | ND | ND | ND | 0.72 | 4.1 | 17 | 1.1 | ND | ND | ND | ND | ND | 2.56 | 17.7 | |
| Naphthalene | 10,000 | NE | 10,000 | mg/kg | ND | ND | 1.4 | ND | 0.66 | 4.3 | 1.2 | 0.44 | ND | ND | ND | ND | 1.3 | 2.5 | 0.36 | ND | 4.4 | ND | 13.2 | ND | 127 | 17.2 | |
| Phenanthrene | 10,000 | NE | 10,000 | mg/kg | 1.9 | ND | 8.1 | 1.9 | 3.1 | 8.5 | 49 | 4.1 | ND | ND | ND | 0.79 | 5.1 | 12 | 4.2 | ND | 25.9 | 7.42 | 33 | ND | 106 | 21 | |
| Pyrene | 10,000 | NE | 10,000 | mg/kg | 7.3 | ND | 19 | 8 | 1.1 | 61 | 36 | 49 | 0.4 | ND | ND | 2.7 | 20 | 70 | 3.8 | ND | 10.1 | 4.19 | 18.5 | ND | 34.5 | 51.7 | |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TPH | 2,500 | 2,500 | 30,000 | mg/kg | ND | ND | ND | ND | ND | 2800 | 2500 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3482 | NA | NA | 590 | 6920 | 6310 |
| TPH (gasoline range) | 2,500 | 2,500 | 30,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 128 | 107 | NA | NA | NA |
| TPH (diesel range) | 2,500 | 2,500 | 30,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10000 | 11000 | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Cyanide | 10,000 | NE | 10,000 | mg/kg | 2 | 0.059 | 2.2 | 0.6 | 0.24 | 10.7 | 0.095 | 0.97 | 0.15 | 0.16 | 0.099 | 0.23 | 2.1 | 2.5 | 4.8 | 0.24 | NA | NA | NA | ND | ND | 52.3 | |
| Antimony | 820 | NE | 10,000 | mg/kg | 8.1 | NA | NA | 1.2 | NA | 1.5 | NA | 0.7 | NA | 0.65 | NA | 0.33 | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | 8.7 |
| Arsenic | 7 | NE | 10,000 | mg/kg | 14.1 | NA | NA | 6 | NA | 13.5 | NA | 5.2 | ND | 3 | NA | 2 | NA | NA | NA | NA | NA | 3.62 | 6.48 | 7.3 | 3.8 | 15 | |
| Barium | 10,000 | NE | 10,000 | mg/kg | 116 | NA | NA | 55.9 | NA | 28 | NA | 34.8 | ND | 15.7 | NA | 12.9 | NA | NA | NA | NA | NA | 31 | 11.8 | NA | NA | NA | |
| Beryllium | 1.5 | NE | 10,000 | mg/kg | 0.51 | NA | NA | 0.4 | NA | 0.31 | NA | 0.3 | NA | 0.23 | NA | 0.27 | NA | NA | NA | NA | NA | NA | NA | 0.28 | 0.54 | 0.35 | |
| Cadmium | 1,000 | NE | 10,000 | mg/kg | 3.5 | NA | NA | 0.8 | NA | 1.4 | NA | 0.76 | NA | 1.8 | NA | 0.49 | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| Chromium | 10,000 | NE | 10,000 | mg/kg | 19.2 | NA | NA | 7.3 | NA | 11.1 | NA | 4.1 | NA | 10.6 | NA | 2.8 | NA | NA | NA | NA | NA | 2.62 | 8 | 6.3 | 7.7 | 8.7 | |
| Copper | 10,000 | NE | 10,000 | mg/kg | 176 | NA | NA | 35 | NA | 35.6 | NA | 13.8 | NA | 13.5 | NA | 12.5 | NA | NA | NA | NA | NA | NA | NA | 11.2 | 13.2 | 30.9 | |
| Iron | NE | NE | NE | mg/kg | 30200 | 7910 | 15200 | 6530 | 11800 | 14100 | 5370 | 7170 | 6760 | 16600 | 6840 | 5480 | 5660 | 12900 | 11900 | 4600 | NA | NA | NA | NA | NA | NA | |
| Lead | 500 | NE | 10,000 | mg/kg | 895 | NA | NA | 176 | NA | 292 | NA | 76.7 | NA | 17 | NA | 16.7 | NA | NA | NA | NA | NA | 15.5 | 12.4 | 6.6 | 30.7 | 299 | |
| Mercury | 610 | NE | 10,000 | mg/kg | 0.44 | NA | NA | 0.085 | NA | 0.78 | NA | 0.12 | NA | ND | NA | 0.027 | NA | NA | NA | NA | NA | NA | ND | ND | ND | 0.047 | 0.451 |
| Nickel | 10,000 | NE | 10,000 | mg/kg | 19.5 | NA | NA | 8.9 | NA | 12.6 | NA | 5.9 | NA | 11.6 | NA | 4.2 | NA | NA | NA | NA | NA | NA | NA | NA | 8.6 | 7.2 | 11.3 |
| Selenium | 10,000 | NE | 10,000 | mg/kg | ND | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | NA | NA | NA | NA | NA | NA | 1.61 | 1.14 | ND | ND | ND |
| Silver | 10,000 | NE | 10,000 | mg/kg | 6.6 | NA | NA | 1.4 | NA | 2.7 | NA | 1.1 | NA | 2.8 | NA | 0.98 | NA | NA | NA | NA | NA | NA | ND | ND | ND | ND | |
| Zinc | 10,000 | NE | 10,000 | mg/kg | 99.1 | NA | NA | 52.7 | NA | 34.7 | NA | 32.5 | NA | 46 | NA | 26.6 | NA | NA | NA | NA | NA | NA | NA | NA | 29.1 | 28.7 | 46.4 |

Notes:
 ND - Not Detected NE - Not Established R - sample rejected by the lab
 NA - Not Analyzed N/A - Not Applicable
 While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

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TABLE T-1 - SUBSURFACE SOIL DATA

COVE AREA DATA GAP

642 Allens Ave
Providence, Rhode Island

| | RIDEM (I/C DEC) | RIDEM GB Leachability Criteria | RIDEM Upper Concentration Limit (UCL) | Units | B17 | | B18 | | B20 | | B21 | | B22 | | B23 | | B24 | B24 | B25 | B26 | D94 | VHB-4 | TP-1 | TP-6 | GZ-313D | GZ-314D | GZ-315D |
|---|-----------------|--------------------------------|---------------------------------------|-------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
| | | | | | 1/31/2000 | | 1/27/2000 | | 1/31/2000 | | 1/31/2000 | | 1/31/2000 | | 1/31/2000 | | 2/1/2000 | 2/1/2000 | 2/1/2000 | 2/3/2000 | 4 - 6 FT | 1/14/2002 | 5/20/2002 | 5/20/2002 | 05/19/2014 | 05/27/2014 | 05/28/2014 |
| | | | | | 0 - 2 FT | 4 - 6 FT | 4 - 6 FT | 0 - 2 FT | 4 - 6 FT | 0 - 2 FT | 4 - 6 FT | 0 - 2 FT | 4 - 6 FT | 0 - 2 FT | 4 - 6 FT | 0 - 2 FT | 6 - 8 FT | 4 - 6 FT | 4 - 6 FT | 1/28/2000 | 8 - 10 FT | >2 FT | >2 FT | 4 - 6 FT | 4 - 6 FT | 4 - 6 FT | |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4 Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 0.58 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.4 | 13.3 | 5.9 | ND | 13.3 | 0.0368 | |
| 1,3,5 Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 0.35 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.7 | 4.35 | 2.1 | ND | 2.36 | 0.0352 | |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 0.44 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.4 | 2 | ND | ND | 1.5 | ND | |
| Benzene | 200 | 4.3 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.97 | 0.0477 | | |
| Ethylbenzene | 10,000 | 62 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.65 | 1.15 | ND | 5.98 | 0.01 | |
| Isopropylbenzene | 10,000 | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.3 | ND | ND | ND | 0.883 | ND | |
| Methylene Chloride | 760 | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.4 | ND | ND | ND | ND | ND | |
| Naphthalene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | 3.3 | ND | ND | ND | ND | ND | 0.45 | ND | ND | ND | 7.7 | 51 | 23.7 | 0.0618 | 120 | 0.868 | |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.45 | 0.0373 | 2.61 | ND | |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.6 | ND | ND | ND | 0.518 | ND | |
| sec-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.8 | ND | ND | 0.011 | 0.469 | ND | |
| Styrene | 190 | 64 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.041 | | |
| tert-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.1 | ND | ND | ND | 0.0574 | ND | |
| Toluene | 10,000 | 62 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.43 | 0.134 | |
| Total Xylenes | 10,000 | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.95 | 1.09 | ND | 2.67 | 0.139 | |
| Pesticides and Poly-Chlorinated Biphenyls (PCBs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor-1242 | 10 | 10 | 10,000 | mg/kg | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 7.9 | ND | NA | NA | NA | NA | NA | NA | NA | NA | |
| 4-DDT | NE | NE | 10,000 | mg/kg | ND | NA | NA | ND | NA | ND | NA | 0.089 | NA | ND | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Endrin | NE | NE | 10,000 | mg/kg | ND | NA | NA | 0.41 | NA | ND | NA | ND | NA | ND | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Gamma-Chlordane | NE | NE | 10,000 | mg/kg | ND | NA | NA | ND | NA | ND | NA | ND | NA | ND | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |

Notes:

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NA - Not Analyzed N/A - Not Applicable

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Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.

TABLE T-2 -
SOIL TPH FINGERPRINTING RESULTS
COVE AREA DATE GAP
642 Allens Ave
Providence, Rhode Island

File No. 03.0033554.01
1/5/2024

| | Well ID | RCA-3 | RCA-4 | RCA-5 | ETP-38 | GZ-313D (Note 1) |
|-------------------------------------|---------|---------------|------------------------|------------|------------------------|------------------------------|
| | Depth | 8 - 10 ft bgs | 8 - 10 FT | 14 - 16 FT | 8.5 ft bgs | 18-20 FT |
| | Date | 1994 | 1994 | 1994 | 1996 | 5/27/2014 |
| Total Petroleum Hydrocarbons | Units | | | | | |
| TPH | mg/kg | 11,100 | 7690 | 6250 | 9,580 | 1,210 |
| TPH Fingerprint | NA | Fuel Oil | Coal Tar / Fuel Oil | Fuel Oil | Coal Tar / Fuel Oil | Tar Impacted Hydrocarbons |

Notes:

Note 1 - The tar material present in this sample indicates varying degrees of weathering.

**TABLE T-3 -
 SEDIMENT TPH FINGERPRINTING RESULTS
 COVE AREA DATA GAP**

File No. 03.0033554.01
 1/5/2024

642 Allens Ave
 Providence, Rhode Island

| | Well ID | RSS-1 | RSS-2 | RSS-3 | RSS-4 | RSS-5 | RSS-6 | RSS-7 |
|-------------------------------------|---------|------------------------|------------------------|------------------------|------------------------|----------|----------------------|------------------------|
| | Depth | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT | 0-2 FT |
| | Date | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 | 1996 |
| Total Petroleum Hydrocarbons | Units | | | | | | | |
| TPH | mg/kg | Note 1 | Note 1 | Note 1 | Note 1 | Note 1 | Note 1 | Note 1 |
| TPH Fingerprint | NA | Coal Tar / Fuel Oil | Coal Tar / Fuel Oil | Coal Tar / Fuel Oil | Coal Tar / Fuel Oil | Fuel Oil | Diesel / Coal Tar | Coal Tar / Fuel Oil |

Notes:

Note 1 - TPH Hydrocarbon Content is noted as qualitative results only.

**TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | December 2009 | | | | | | | June 2010 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 8.01 | - | 17.5 | 3.43 | NP | NP | 3.43 | - | 9.45 | - | 17.41 | 1.99 | NP | NP | 1.99 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the Former CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 NI - Not Installed

TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | January 2011 | | | | | | | July 2011 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 9.95 | trace | 17.65 | 1.49 | NP | trace | 1.49 | - | 8.51 | trace | 17.75 | 2.93 | NP | trace | 2.93 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | - | 10.04 | - | 13.33 | 2.23 | NP | NP | 2.23 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | NS | NS | NS | NS | NS | NS | NS | NS | - | 11.35 | - | 17.9 | 2.95 | NP | NP | 2.95 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | NS | NS | NS | NS | NS | NS | NS | NS | 10.92 | 10.94 | - | 12.35 | 2.14 | 0.02 | NP | 2.16 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the Former CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 NI - Not Installed

**TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | August 2011 | | | | | | | February 2012 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 8.45 | trace | 17.75 | 2.99 | NP | trace | 2.99 | - | 9.4 | trace | 17.55 | 2.04 | NP | trace | 2.04 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.33 | - | 13.33 | 1.94 | NP | NP | 1.94 | - | 10.75 | - | 13.45 | 1.52 | NP | NP | 1.52 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 12.25 | - | 17.9 | 2.05 | NP | NP | 2.05 | - | 12.35 | - | 18 | 1.95 | NP | NP | 1.95 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | 11.27 | 11.3 | - | 12.35 | 1.78 | 0.03 | NP | 1.81 | 11.67 | 11.68 | - | 12.45 | 1.40 | 0.01 | NP | 1.41 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
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TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2012 | | | | | | | February 2013 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 7.91 | trace | 17.55 | 3.53 | NP | trace | 3.53 | - | 9.25 | trace | 17.65 | 2.19 | NP | trace | 2.19 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.44 | - | 13.45 | 1.83 | NP | NP | 1.83 | - | 10.59 | - | 13.55 | 1.68 | NP | NP | 1.68 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 12.31 | - | 17.92 | 1.99 | NP | NP | 1.99 | - | 12.71 | - | 17.9 | 1.59 | NP | NP | 1.59 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | trace | 11.4 | - | 12.4 | 1.68 | trace | NP | 1.68 | trace | 11.77 | - | 12.5 | 1.31 | trace | NP | 1.31 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | NI | |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the Former CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
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 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
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**TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | November 2013 | | | | | | | June 2014 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 9.44 | trace | 17.7 | 2.00 | NP | trace | 2.00 | - | 8.82 | Trace | 17.8 | 2.62 | NP | Trace | 2.62 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 8.17 | - | 38.2 | 3.47 | NP | NP | 3.47 |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.77 | - | 13.45 | 1.50 | NP | NP | 1.50 | - | 10.39 | - | 17.4 | 1.88 | NP | NP | 1.88 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 12.8 | - | 17.92 | 1.50 | NP | NP | 1.50 | - | 11.98 | - | 17.9 | 2.32 | NP | NP | 2.32 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | 11.60 | 11.61 | - | 12.4 | 1.47 | 0.01 | NP | 1.48 | Trace | 11.33 | - | 12.56 | 1.75 | NP | NP | 1.75 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 11.91 | - | 21.94 | 2.28 | NP | NP | 2.28 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 11.83 | - | 37.00 | 2.28 | NP | NP | 2.28 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | NI | NI | NI | NI | NI | NI | NI | NI | - | 11.13 | - | 33.05 | 1.80 | NP | NP | 1.80 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
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TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2, 2014 | | | | | | | July 23, 2014 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 8.91 | Trace | 18.11 | 2.53 | NP | Trace | 2.53 | - | 9.49 | Trace | 17.91 | 1.95 | NP | Trace | 1.95 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 8.57 | - | 38.11 | 3.07 | NP | NP | 3.07 | - | 10.16 | - | 38.05 | 1.48 | NP | NP | 1.48 |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.55 | - | 17.25 | 1.72 | NP | NP | 1.72 | - | 10.68 | - | 17.35 | 1.59 | NP | NP | 1.59 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | NS | NS | NS | NS | NS | NS | NS | NS | Trace | 11.51 | - | 12.56 | 1.57 | Trace | NP | 12.56 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | - | 12.28 | - | 21.80 | 1.91 | NP | NP | 1.91 | - | 12.48 | - | 21.81 | 1.71 | NP | NP | 1.71 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 12.18 | - | 37.00 | 1.93 | NP | NP | 1.93 | - | 12.48 | - | 36.95 | 1.63 | NP | NP | 1.63 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.26 | - | 32.90 | 1.67 | NP | NP | 1.67 | - | 11.36 | - | 32.93 | 1.57 | NP | NP | 1.57 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the Former CNG Fueling Station portion of the Property
- Elevations are relative to NAVD88
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
- NI - Not Installed

TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS
 642 Allens Avenue
 Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | | October 2014 | | | | | | | | April 2015 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 9.35 | Trace | 18.1 | 2.09 | NP | Trace | 2.09 | - | 8.51 | trace | 18.1 | 2.93 | NP | trace | 2.93 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 8.71 | - | 38.2 | 2.93 | NP | NP | 2.93 | - | 8.83 | - | 38.15 | 2.81 | NP | NP | 2.81 |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.67 | - | 17.42 | 1.60 | NP | NP | 1.60 | - | 10.76 | - | 17.28 | 1.51 | NP | NP | 1.51 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 11.57 | - | 12.67 | 2.73 | NP | NP | 2.73 | trace | 12.38 | - | 17.85 | 1.92 | trace | NP | 1.92 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Trace | 10.71 | - | 12.55 | 2.37 | Trace | NP | 2.37 | trace | 11.62 | - | 12.4 | 1.46 | trace | NP | 1.46 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | - | 12.54 | - | 21.76 | 1.65 | NP | NP | 1.65 | - | 12.3 | - | 21.75 | 1.89 | NP | NP | 1.89 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 12.43 | - | 36.93 | 1.68 | NP | NP | 1.68 | - | 12.2 | - | 37.00 | 1.91 | NP | NP | 1.91 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.39 | - | 33.07 | 1.54 | NP | NP | 1.54 | - | 11.46 | - | 32.90 | 1.47 | NP | NP | 1.47 |

Notes
 Well is located in the Natural Gas Regulator portion of the Property
 Well is located at the LNG Facility
 Well is located in the Former CNG Fueling Station portion of the Property
 Elevations are relative to NAVD88
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.
 NI - Not Installed

**TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | | | October 2015 | | | | | | | May 2016 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 9.24 | trace | 18 | 2.20 | NP | trace | 2.20 | - | 9.48 | trace | 17.9 | 1.96 | NP | trace | 1.96 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 9.33 | - | 38.15 | 2.31 | NP | NP | 2.31 | - | 9.65 | - | 38.1 | 1.99 | NP | NP | 1.99 |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | - | 10.65 | - | 17.32 | 1.62 | NP | NP | 1.62 | - | 10.8 | - | 17.32 | 1.47 | NP | NP | 1.47 |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | - | 12.68 | - | 18 | 1.62 | NP | NP | 1.62 | - | 11.62 | - | 12.35 | 2.68 | NP | NP | 2.68 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | - | 11.35 | - | 12.44 | 1.73 | NP | NP | 1.73 | - | 11.05 | - | 0.00 | 2.03 | NP | NP | 2.03 |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | - | 12.52 | - | 21.89 | 1.67 | NP | NP | 1.67 | - | 11.98 | - | 21.75 | 2.21 | NP | NP | 2.21 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 12.47 | - | 37.00 | 1.64 | NP | NP | 1.64 | - | 11.92 | - | 36.85 | 2.19 | NP | NP | 2.19 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.32 | - | 32.93 | 1.61 | NP | NP | 1.61 | - | 11.45 | - | 32.8 | 1.48 | NP | NP | 1.48 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

**TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | October 2016 | | | | | | | May 2017 | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

**TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | March 2018 | | | | | | | November 2018 | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

**TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2019 | | | | | | | November 2019 | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

TABLE T-4
SUMMARY OF GROUNDWATER AND NAPL GAUGING RESULTS

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2020 | | | | | | | November 2020 | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | RCA-5 | 12.68 | 12.27 | 10.79 | Standpipe | Shallow | 9/7/1994 | 15.92 | 6 - 16 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | CHES RW-3 | 14.30 | 14.30 | 11.24 | Recovery Well | Shallow | 2002 | 14.84 | Unknown | trace | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-314S | 14.35 | 14.19 | 11.13 | Standpipe | Shallow | 6/3/2014 | 18.88 | 4 - 19 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

NI - Not Installed

TABLE T-5
HISTORICAL LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
642 Allens Avenue
Providence, Rhode Island

| Date | November 2001 | June 2002 | September 2002 | October 2002 | October 2002 | November 2002 | December 2002 | December 2002 | January 2003 | February 2003 | February 2003 | February 2003 |
|--|---------------|-----------|----------------|--------------|--------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|
| Natural Gas Regulation Facility | | | | | | | | | | | | |
| RCA-4 | 0.17 | NG | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| RCA-5 | ND | NG | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG |
| CHES RW-3 | NI | NI | NI | ND | ND | ND | ND | ND | ND | NG | ND | ND |
| CHES RW-4 | NI | NI | NI | 0.03 | 0.02 | 0.09 | 0.08 | 0.05 | 0.03 | NG | 0.03 | 0.02 |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

NG - Not Gauged

RCA-21 was destroyed in late June 2014 and replaced with RW-1

Please refer to Table 5 for monthly gauging and recovery data for GZ-307S

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

Decom - Decommissioned

TABLE T-5
HISTORICAL LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
642 Allens Avenue
Providence, Rhode Island

| Date | September 2003 | September 2005 | March 2006 | June 2006 | July 2006 | October 2006 | December 2006 | March 2008 | December 2009 | June 2010 | January 2011 | July 2011 |
|-------------------------------|----------------|----------------|------------|-----------|-----------|--------------|---------------|------------|---------------|-----------|--------------|-----------|
| Natural Gas Regulation | | | | | | | | | | | | |
| RCA-4 | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| RCA-5 | trace | trace | NG | NG | NG | NG | NG | NG | NG | NG | NG | ND |
| CHES RW-3 | NG | ND | NG | NG | NG | NG | NG | NG | NG | NG | NG | ND |
| CHES RW-4 | NG | 2 | ND | 0.18 | 0.13 | 0.1 | 0.08 | 0.09 | NG | NG | NG | 0.02 |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

NG - Not Gauged

RCA-21 was destroyed in late June 2014 and replaced with RW-1

Please refer to Table 5 for monthly gauging and recovery data for GZ-307S

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

Decom - Decommissioned

TABLE T-5
HISTORICAL LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
642 Allens Avenue
Providence, Rhode Island

| Date | August 2011 | February 2012 | July 2012 | February 2013 | November 2013 | June 2014 | July 2, 2014 | July 23, 2014 | October 2014 | April 2015 | October 2015 | May 2016 |
|------------------------------|-------------|---------------|-----------|---------------|---------------|-----------|--------------|---------------|--------------|------------|--------------|----------|
| Natural Gas Regulator | | | | | | | | | | | | |
| RCA-4 | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| RCA-5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| CHES RW-3 | ND | ND | ND | ND | ND | ND | NG | NG | ND | trace | ND | ND |
| CHES RW-4 | 0.03 | 0.01 | trace | trace | 0.01 | ND | NG | trace | trace | trace | ND | ND |

Notes:

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the Former CNG Fueling Station portion of the Property

NG - Not Gauged

RCA-21 was destroyed in late June 2014 and replaced with RW-1

Please refer to Table 5 for monthly gauging and recovery data for GZ-307S

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

Decom - Decommissioned

TABLE T-5
HISTORICAL LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
 642 Allens Avenue
 Providence, Rhode Island

| Date | October 2016 | May 2017 | March 2018 | November 2018 | June 2019 | November 2019 | June 2020 | November 2020 |
|-------------------------------|--------------|----------|------------|---------------|-----------|---------------|-----------|---------------|
| Natural Gas Regulation | | | | | | | | |
| RCA-4 | Dest | Dest | Dest | Dest | Dest | Dest | Dest | Dest |
| RCA-5 | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| CHES RW-3 | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |
| CHES RW-4 | Decom | Decom | Decom | Decom | Decom | Decom | Decom | Decom |

Notes:

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the Former CNG Fueling Station portion of the Property

NG - Not Gauged

RCA-21 was destroyed in late June 2014 and replaced with RW-1

Please refer to Table 5 for monthly gauging and recovery data for GZ-307S

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

Decom - Decommissioned

TABLE T-6
HISTORICAL DENSE NON-AQUEOUS PHASE LIQUID (DNAPL) WELL GAUGING DATA
 642 Allens Avenue
 Providence, Rhode Island

| Date | November 2001 | September 2002 | September 2003 | September 2005 | March 2008 | December 2009 | June 2010 | January 2011 | July 2011 | August 2011 | February 2012 | July 2012 | February 2013 | November 2013 | June 2014 |
|-------|---------------|----------------|----------------|----------------|------------|---------------|-----------|--------------|-----------|-------------|---------------|-----------|---------------|---------------|-----------|
| RCA-3 | 0.17 | trace | trace | trace | ND | ND | ND | trace | trace | trace | trace | trace | trace | trace | trace |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the Former CNG Fueling Station portion of the Property

NG - Not Gauged

This table presents DNAPL thickness data for monitoring wells that have exhibited DNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

Decom - Decommissioned

TABLE T-6
HISTORICAL DENSE NON-AQUEOUS PHASE LIQUID (DNAPL) WELL GAUGING DATA
 642 Allens Avenue
 Providence, Rhode Island

| Date | July 2, 2014 | July 23, 2014 | October 2014 | April 2015 | October 2015 | May 2016 | October 2016 | May 2017 | March 2018 | November 2018 | June 2019 | November 2019 | November 2020 |
|-------|--------------|---------------|--------------|------------|--------------|----------|--------------|----------|------------|---------------|-----------|---------------|---------------|
| RCA-3 | trace | trace | trace | trace | trace | trace | Decom | Decom | Decom | Decom | Decom | Decom | Decom |

Notes:

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the Former CNG Fueling Station portion of the Property

NG - Not Gauged

This table presents DNAPL thickness data for monitoring wells that have exhibited DNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

Decom - Decommissioned

**TABLE T-7 -
GROUNDWATER ANALYTICAL DATA
COVE AREA DATA GAP
642 Allens Avenue
Providence, Rhode Island**

| | RIDEM GB Groundwater Objective | RIDEM GB Groundwater UCL | Well ID: Date: Units | RCA-3 | | | | | | | | | | | | |
|--|--------------------------------------|-----------------------------|----------------------------|--------------|------------|---------------|----------------|----------------|------------|---------------|-----------|-------------|-----------|---------------|-----------|--------------|
| | | | | October 1994 | March 1996 | November 2001 | September 2003 | September 2005 | March 2008 | December 2009 | June 2010 | August 2011 | July 2012 | November 2013 | June 2014 | October 2015 |
| | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | 0.275 | 0.165 | 0.138 | 0.17 | ND | 0.074 | 0.034 | 0.08 | 0.0758 | 0.0668 | 0.076 | 0.148 |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | 0.043 | 0.0302 | 0.0388 | ND | 0.011 | 0.0028 | 0.011 | 0.0072 | 0.0085 | 0.0118 | 0.024 |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | 0.00321 | 0.0107 | NA | NA | NA | NA | 0.0024 | 0.0023 | 0.0039 | 0.0059 |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | ND | ND | ND | 0.00348 | 0.0011 | ND | ND | ND | ND | 0.0129 | 0.0113 | 0.0051 | 0.116 |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chlorobenzene | 3.2 | 56 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | mg/L | 0.145 | ND | 0.061 | 0.0476 | 0.0523 | ND | 0.0049 | 0.0046 | 0.017 | 0.032 | 0.0323 | 0.0206 | 0.0841 |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0187 | 0.0225 | ND | 0.01 | 0.0043 | 0.014 | 0.0098 | 0.0098 | 0.0123 | 0.0228 |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0004 |
| Methylene Chloride | 760 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | 2.05 | 2.19 | 0.878 | 0.65 | ND | 0.46 | 0.13 | 0.54 | 0.466 | 0.417 | 0.461 | 0.813 |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | 0.0059 | 0.0032 | 0.005 | 0.0052 | 0.005 | ND | 0.008 |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0106 | 0.0163 | ND | 0.0072 | 0.0037 | 0.0084 | 0.0054 | 0.0059 | 0.0075 | 0.0094 |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | 0.0028 | ND | ND | 0.0014 | ND | 0.0016 | 0.0016 | 0.0018 | 0.0021 |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0003 | ND | ND | 0.0009 |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | 0.0013 | ND | ND | ND | ND | 0.0006 | ND | ND | 0.0006 |
| Toluene | 1.7 | 21 | mg/L | 0.035 | ND | ND | 0.00467 | 0.0024 | ND | ND | ND | ND | 0.0053 | 0.0048 | 0.0024 | 0.012 |
| Xylene O | NE | NE | mg/L | NA | NA | NA | NA | NA | ND | 0.0036 | 0.0027 | 0.011 | 0.018 | 0.0195 | 0.0118 | 0.0525 |
| Xylene P,M | NE | NE | mg/L | NA | NA | NA | NA | NA | ND | 0.0052 | 0.0029 | 0.014 | 0.0132 | 0.0121 | 0.0104 | 0.0409 |
| Xylenes (Total) | NE | NE | mg/L | 0.395 | ND | 0.099 | 0.0607 | 0.078 | ND | 0.0052 | 0.0056 | 0.025 | 0.0311 | 0.0316 | 0.0222 | 0.0934 |
| Total VOCs | NE | NE | mg/L | 0.575 | 2.325 | 2.558 | 1.19516 | 1.0462 | ND | 0.5818 | 0.1896 | 0.7004 | 0.6557 | 0.5969 | 0.6468 | 1.434 |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | NE | NE | mg/L | 1.79 | 0.453 | 0.27 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | 0.114 | 0.105 | 0.16 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | 0.363 | 0.082 | 0.016 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Anthracene | NE | NE | mg/L | ND | 0.041 | 0.028 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo [a] Anthracene | NE | NE | mg/L | ND | ND | 0.011 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo [a] Pyrene | NE | NE | mg/L | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo [b] Fluoranthene | NE | NE | mg/L | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo[k]fluoranthene | NE | NE | mg/L | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | NE | mg/L | ND | ND | 0.013 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | NE | mg/L | ND | ND | 0.017 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | 0.147 | 0.057 | 0.067 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | 2.67 | NE | mg/L | 5.22 | 1.42 | 0.99 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | 0.345 | 0.041 | 0.1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | 0.164 | ND | 0.028 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | 27 | 11.9 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | |
| Total Metals | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:

ND - Not Detected
NE - Not Established
NA - Not Analyzed
N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives
Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

- This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
- The detected concentrations were compared to RIDEM Method 1 Criteria.

**TABLE T-7 -
GROUNDWATER ANALYTICAL DATA
COVE AREA DATA GAP
642 Allens Avenue
Providence, Rhode Island**

| | RIDEM GB Groundwater Objective | RIDEM GB Groundwater UCL | Well ID: | RCA-4 | | | RCA-5 | | | | | B22 | GZ-313D | GZ-314S | | | GZ-314D | | | GZ-315D |
|--|--------------------------------|--------------------------|----------|----------|--------------|-------------|--------------|------------|---------------|-----------|------------|-----------|------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| | | | Date: | May 2016 | October 1994 | March 1996 | October 1994 | March 1996 | November 2001 | July 2013 | 06/19/2014 | 3/10/2000 | 06/18/2014 | 06/19/2014 | 10/16/2015 | May 2016 | 06/19/2014 | 10/16/2015 | May 2016 | 06/19/2014 |
| | | | Units | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | 0.116 | ND | ND | ND | 0.024 | 0.0051 | ND | 0.0039 | NA | 0.0565 | 0.247 | 0.258 | 0.338 | 0.183 | 0.0825 | 0.12 | 0.2 |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | 0.025 | ND | ND | ND | ND | ND | ND | ND | NA | 0.0112 | 0.0667 | 0.049 | 0.0862 | 0.0379 | 0.0218 | 0.0185 | 0.056 |
| 4-Isopropyltoluene | NE | NE | mg/L | 0.0089 | ND | ND | ND | ND | ND | ND | ND | NA | 0.0024 | 0.0111 | 0.016 | 0.0141 | 0.0083 | 0.0038 | 0.0035 | 0.0117 |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | 0.0028 | 0.0028 | ND |
| Benzene | 0.14 | 18 | mg/L | 0.0049 | 19.3 | 28.5 | 0.105 | ND | 0.0036 | 0.0038 | 0.008 | 0.012 | 0.0433 | 7.27 | 7.67 | 4.83 | 2.01 | 1.79 | 1.22 | 0.698 |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | 0.0023 | 0.0023 | ND |
| Chlorobenzene | 3.2 | 56 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0003 | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | mg/L | 0.0261 | 1.75 | 2.5 | 0.41 | 0.008 | 0.0151 | 0.0016 | 0.0094 | 0.031 | 0.0147 | 1.57 | 2.37 | 1.83 | 0.642 | 0.518 | 0.438 | 0.596 |
| Isopropylbenzene | NE | NE | mg/L | 0.0228 | ND | ND | ND | ND | ND | ND | 0.0017 | NA | 0.0111 | 0.0579 | 0.052 | 0.0794 | 0.0448 | 0.0296 | 0.0253 | 0.055 |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | 0.0004 | ND | ND | ND | ND | ND | ND | ND | ND | 0.003 | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | 760 | NE | mg/L | ND | 1.5 | ND | 0.05 | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | 0.554 | ND | 7 | ND | 0.041 | 0.0339 | ND | 0.0199 | 0.51 | 0.284 | 5.37 | 4.44 | 6.41 | 3.43 | 2.99 | 2.52 | 3.89 |
| n-Butylbenzene | NE | NE | mg/L | 0.0121 | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | 0.014 | ND | ND | 0.0027 | ND |
| n-Propylbenzene | NE | NE | mg/L | 0.0122 | ND | ND | ND | ND | ND | ND | ND | NA | 0.0035 | 0.018 | ND | 0.0229 | 0.018 | 0.0092 | 0.0082 | 0.0164 |
| sec-Butylbenzene | NE | NE | mg/L | 0.0033 | ND | ND | ND | ND | ND | ND | ND | NA | ND | 0.0016 | ND | 0.0026 | 0.002 | 0.0011 | 0.008 | 0.0016 |
| Styrene | 2.2 | 50 | mg/L | 0.0009 | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | 0.0032 | ND | 0.0005 | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | 0.0011 | ND | ND | ND | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | 0.0003 | 0.0003 | ND |
| Toluene | 1.7 | 21 | mg/L | 0.003 | ND | 2.25 | ND | ND | ND | ND | ND | 0.012 | 0.0018 | 0.0368 | 0.052 | 0.043 | 0.0147 | 0.0145 | 0.0086 | 0.0184 |
| Xylene O | NE | NE | mg/L | 0.0172 | NA | NA | NA | NA | NA | ND | 0.0037 | NA | 0.0153 | 0.412 | 0.546 | 0.5 | 0.144 | 0.082 | 0.0964 | 0.288 |
| Xylene P,M | NE | NE | mg/L | 0.0192 | NA | NA | NA | NA | NA | ND | ND | NA | 0.0065 | ND | 0.226 | 0.18 | 0.0407 | 0.0347 | 0.0208 | 0.0867 |
| Xylenes (Total) | NE | NE | mg/L | 0.0365 | ND | 1.75 | 0.395 | 0.006 | 0.0083 | ND | 0.0037 | 0.079 | 0.0218 | 0.412 | 0.772 | 0.681 | 0.185 | 0.117 | 0.117 | 0.375 |
| Total VOCs | NE | NE | mg/L | 0.8271 | 22.55 | 42 | 0.96 | 0.079 | 0.066 | 0.0054 | 0.0503 | 0.644 | 0.4751 | 15.4731 | 16.451 | 14.3537 | 6.7604 | 5.7001 | 4.4954 | 6.2928 |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | NE | NE | mg/L | NA | 0.821 | 0.95 | 0.001 | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | NA | 0.268 | 0.176 | 0.309 | ND | 0.024 | 0.0106 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | NA | 0.022 | 0.127 | 0.183 | ND | 0.019 | 0.0127 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Anthracene | NE | NE | mg/L | NA | 0.09 | 0.019 | 0.063 | ND | ND | 0.0061 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo [a] Anthracene | NE | NE | mg/L | NA | 0.042 | 0.022 | 0.022 | ND | ND | 0.0007 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo [a] Pyrene | NE | NE | mg/L | NA | 0.017 | ND | ND | ND | ND | 0.0004 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo [b] Fluoranthene | NE | NE | mg/L | NA | 0.027 | 0.01 | ND | ND | ND | 0.0003 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo[k]fluoranthene | NE | NE | mg/L | NA | ND | ND | ND | ND | ND | 0.0001 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | NE | mg/L | NA | 0.038 | 0.012 | 0.022 | ND | ND | 0.0006 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NE | NE | mg/L | NA | 0.029 | NA | ND | ND | ND | 0.0028 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | NE | mg/L | NA | 0.065 | 0.043 | 0.033 | ND | ND | 0.0168 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | NA | 0.093 | 0.114 | 0.092 | ND | 0.033 | 0.0001 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | 2.67 | NE | mg/L | NA | 1.37 | 3.5 | 1.1 | ND | ND | 0.0005 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | NA | 0.358 | 0.209 | 0.264 | ND | 0.026 | 0.0217 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | NA | 0.162 | 0.068 | 0.093 | ND | ND | 0.005 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | NA | 90 | 34.8 | 18 | 19.2 | NA | 2.16 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | | | | | | | | |
| Total Metals | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:
 ND - Not Detected NE - Not Established
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives
Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

- This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
- The detected concentrations were compared to RIDEM Method 1 Criteria.

COVE AREA DATA GAP

642 Allens Avenue
 Providence, Rhode Island

| | Well ID: | RCA-3 | | RCA-4 | | RCA-5 | |
|-------------------------------------|----------|--------------|---------------------|--------------|---------------------|--------------|---------------------|
| | Date: | October 1994 | March 1996 | October 1994 | March 1996 | October 1994 | March 1996 |
| | Units | | | | | | |
| Total Petroleum Hydrocarbons | | | | | | | |
| TPH | mg/L | 27 | 11.9 | 90 | 34.8 | 18 | 19.2 |
| TPH Fingerprint | N/A | Fuel Oil | Kerosene / Fuel Oil | Fuel Oil | Kerosene / Fuel Oil | Fuel Oil | Coal Tar / Fuel Oil |

TABLE T-9
SUMMARY OF SHEEN OBSERVATIONS
642 Allens Avenue
Providence, Rhode Island

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|----------------------------------|-------------------------|---|---|
| 9/22/2011 | 8:40 | Low | Along shoreline stretching from RCA-40 to RCA-3. | Small dull spots. |
| 9/22/2011 | 9:00 | Low | Outfall proximate to Motiva property. | Moderate dull bands. |
| 9/22/2011 | 9:15 | Low | Along shoreline stretching from RCA-40 to RCA-3. | Large dull bands and moderate dull spots. |
| 10/28/2011 | 9:00 | High | No sheens observed. | |
| | 14:30 | Mid-Low | No sheens observed. | |
| 12/22/2011 | 10:40 | Low | Outside of Boom, along shoreline stretching from RCA-5 to RCA-20. | Moderate dull bands and small dull spots. |
| 12/22/2011 | 10:40 | Low | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Large dull bands and moderate dull spots. |
| 12/22/2011 | 11:00 | Low | Outfall proximate to Motiva property. | Very small dull spots |
| 2/3/2012 | 12:00 | Low-Mid | Outside of Boom, north of the RIPDES outfall (within cove) | Moderate dull spots |
| 2/8/2012 | 15:10 | Mid | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Small dull spots. |
| 2/15/2012 | 11:55 | Mid | Outside of Boom, along shoreline stretching from RCA-5 to RCA-20. | Small dull spots. |
| 2/15/2012 | 11:55 | Mid | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Large bright bands. |
| 2/23/2012 | 15:00 | Low | No sheens observed. | |
| 3/2/2012 | 14:20 | High | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Minor to moderate dull spots and bands of sheen |
| 3/2/2012 | 14:30 | High | Outfall proximate to Motiva property. | Large bright bands. |
| 3/9/2012 | 13:10 | Low | Outside of boom, along shoreline stretching from CHES RW-5 to RW-3. | Moderate to minor dull spots of sheen |
| 3/9/2012 | 13:05 | Low | Outfall proximate to Motiva property. | Slight bright bands of sheen |
| 4/13/2012 | 10:53 | Mid | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Moderate to minor dull spots of sheen |
| 4/13/2012 | 10:58 | Mid | Outfall proximate to Motiva property. | Slight bright bands of sheen |
| 5/16/2012 | 13:45 | Mid-High | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Minor to moderate dull bands of sheen |
| 5/16/2012 | 13:45 | Mid-High | Outfall proximate to Motiva property. | Moderate bright bands of sheen |
| 6/29/2012 | 9:35 | Low | Outside of boom, near LNG tank | Bright large sheen spot |
| 6/29/2012 | 9:35 | Low | Within the boom, along shoreline stretching from CHES RW-5 to RW-3. | Bright to dull bands of sheen |
| 6/29/2012 | 9:45 | Low | Outfall proximate to Motiva property. | Slight dull spots |
| 7/19/2012 | 9:50 | Low | Outside of Boom, north of the RIPDES outfall (within cove) to Propane House | Bright moderate sheen spots |
| 7/19/2012 | 9:50 | Low | Outfall proximate to Motiva property. | Bright moderate sheen spots |
| 8/2/2012 | 8:45 | High | Within the boom, along shoreline at CHES RW-4 | Bright moderate sheen bands |
| 8/24/2012 | 10:10 | Mid | Outside of boom, near CHES RW-4 | Bright moderate sheen spot |
| 8/24/2012 | 10:10 | Mid | Within the boom, from CHES RW-4 to Propane House | Bright moderate sheen spots and bands |
| 8/24/2012 | 10:10 | Mid | Outside of boom, from Propane House to RCA-3 | Bright slight sheen spots and bands |
| 8/24/2012 | 10:10 | Mid | Outfall proximate to Motiva property. | Bright slight sheen spots and bands |
| 9/6/2012 | No sheens observed at high tide. | | | |
| 9/13/2012 | 11:20 | Low | Within the boom, near CHES RW-4 | Bright slight sheen bands |
| 9/13/2012 | 11:45 | Low | Outside of boom, near CHES RW-4 | Bright slight sheen spot |
| 9/13/2012 | 11:45 | Low | Within the boom, between CHES RW-3 and CHES RW-4 | Bright moderate bands and spots of sheen |
| 9/25/2012 | 14:00 | Mid | Outfall proximate to Motiva property. | Slight bright bands of sheen |
| 10/31/2012 | 10:15 | High | Within the boom, near CHES RW-4 | Slight bright spots of sheen |
| 11/19/2012 | No sheens observed at high tide. | | | |
| 11/20/2012 | 16:20 | Mid-High | Within the boom, between CHES RW-3 and CHES RW-4 | Moderate long bright bands of sheen |
| 12/20/2012 | 12:00 | Mid-High | No sheens observed. | |

TABLE T-9
SUMMARY OF SHEEN OBSERVATIONS
642 Allens Avenue
Providence, Rhode Island

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|--|-------------------------|--|---|
| 1/4/2013 | No sheen observed at high tide. | | | |
| 2/1/2013 | No sheens observed at high tide. High wind was also noted. | | | |
| 2/26/2013 | 12:48 | Low | Within the boom, near CHES RW-4 | Slight bright spots of sheen |
| 2/26/2013 | 12:52 | Low | Within the boom, between CHES RW-3 and CHES RW-4 | Slight bright spots of sheen |
| 2/26/2013 | 12:56 | Low | Outfall proximate to Motiva property. | Moderate long bright bands of sheen |
| 3/22/2013 | 11:22 | Low | Within the boom, between CHES RW-3 and CHES RW-4 | Moderate bright bands of sheen |
| 3/25/2013 | 11:00 | Low | Within the boom, within sediments exposed at low tide between CHES RW-3 and CHES RW-4 | Slight sheen spots |
| 4/2/2013 | 11:00 | Mid | Within the boom, near CHES RW-4 | Bright bands of sheen |
| 4/24/2013 | No sheens observed at high tide. | | | |
| 4/30/2013 | No sheens observed at high tide. | | | |
| 5/6/2013 | No sheens observed at high tide. | | | |
| 5/14/2013 | 8:15 | Mid-High | Within the boom, between CHES RW-3 and CHES RW-4 | Bands of dull sheen |
| 5/24/2013 | No sheens observed at mid-high tide. | | | |
| 5/31/2013 | 8:00 | Low | Within the boom, between CHES RW-3 and CHES RW-5 | Slight dull bands and spots |
| 5/31/2013 | 9:45 | Mid | Within the boom, between CHES RW-3 and CHES RW-5 | Slight to moderate dull bands and spots |
| 5/31/2013 | 9:50 | Mid | Within the boom, within sediments exposed at mid tide between CHES RW-3 and CHES RW-4 | Bright spots of sheen |
| 6/2/2013 | No sheens observed at mid tide. High wind was also noted. | | | |
| 6/3/2013 | 9:10 | Low | Outside the boom, directly near the repair area (proximate to the gate area) in the LNG portion of the property | Bright to dull spots and blebs of sheen |
| 6/3/2013 | 9:10 | Low | Within the boom, between CHES RW-3 and CHES RW-5 | Moderate dull bands of sheen |
| 6/3/2013 | 12:30 | Mid | Within the boom, between CHES RW-3 and CHES RW-5 | Slight dull bands of sheen |
| 6/3/2013 | 13:15 | Mid | Outside the boom, along the edge of the LNG portion of the property, directly adjacent to the pathway. The sheen was noted as originating from the western part of the cove. | Slight dull bands of sheen |
| 6/10/2013 | No sheens observed at high tide. | | | |
| 6/11/2013 | 12:30 | Mid-High | Within the boom, between CHES RW-3 and CHES RW-5 | Moderate bright bands of sheen |
| 6/13/2013 | 14:25 | Mid | Within the boom, proximate to CHES RW-5 | Moderate dull to bright bands and spots |
| 6/19/2013 | No sheens observed at high tide. | | | |
| 6/20/2013 | 8:30 | Mid | Within the boom, between CHES RW-3 and CHES RW-5 | Moderate bright bands of sheen |
| 6/25/2013 | 11:00 | High | Within the boom, near CHES RW-4 | Slight bright spots of sheen |
| 7/31/2013 | No sheens observed at high tide. | | | |
| 8/28/2013 | 12:30 | Mid-High | Within the boom, directly near the repair area (proximate to the gate area) in the LNG portion of the property | Very slight bright spots |
| 9/5/2013 | 15:06 | Low | Within the boom, near CHES RW-4 | Bright to dull spots and blebs of sheen |
| 9/27/2013 | No sheens observed at high tide. High wind was also noted. | | | |
| 10/30/2013 | 8:30 | Mid | Within the boom, directly near the repair area (proximate to the gate area) in the LNG portion of the property | Very slight bright spots |
| 11/19/2013 | No sheens observed at high tide. High wind was also noted. | | | |
| 12/20/2013 | 10:15 | Mid - Low | Within the boom, directly near the repair area (proximate to the gate area) in the LNG portion of the property | Very slight bright spots |

TABLE T-9
SUMMARY OF SHEEN OBSERVATIONS
642 Allens Avenue
Providence, Rhode Island

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|--|-------------------------------|--|---|
| 1/27/2014 | 9:53 | Low | Outfall proximate to Motiva property. | Slight bright bands of sheen |
| 2/25/2014 | 14:00 | Mid - High | Within the boom, between CHES RW-3 and CHES RW-4 | Slight dull bands of sheen |
| 3/20/2014 | 9:15 | Mid - High | Within the boom, between CHES RW-3 and CHES RW-5 | Moderate long dull bands of sheen |
| 4/29/2014 | 12:30 | Mid-Low | Within the boom, between CHES RW-4 and CHES RW-5 | Slight dull bands of sheen |
| | 12:40 | | Outfall proximate to Motiva property. | Slight bright spots of sheen |
| 5/22/2014 | No sheens observed at high tide. High wind and rain were also noted. | | | |
| 6/3/2014 | No sheens observed at high tide. | | | |
| 7/24/2014 | No sheens observed at high tide. | | | |
| 8/24/2014 | No sheens observed at high tide. High wind was also noted. | | | |
| 9/24/2014 | 10:25 | High-Mid | Within the boom, near CHES RW-3 | Slight dull sheen spots and bands |
| | 10:30 | | Within the boom, near Propane House | Moderate dull to bright bands and spots |
| 10/30/2014 | 7:30 | Low | Inside and outside boom, between CHES RW-3 and CHES RW-5 | Slight bands of dull sheen |
| | | | Within the boom, near CHES RW-3 | Strong bright bands of sheen |
| 11/13/2014 | No sheens observed at high tide. | | | |
| 12/12/2014 | 14:00 | Mid | Within the boom, near CHES RW-3 | Slight dull bands of sheen |
| 1/29/2015 | No sheens observed at mid tide. | | | |
| 2/25/2015 | No sheens observed. Cove completely frozen over. | | | |
| 3/23/2015 | No sheens observed at high tide. High wind was also noted. | | | |
| 4/9/2015 | No sheens observed at high tide. High wind was also noted. | | | |
| 5/22/2015 | 7:43 | Low | Within the boom, near CHES RW-3 | Very slight bright spots |
| 6/17/2015 | No sheens observed at mid tide. High wind was also noted. | | | |
| 7/17/2015 | 11:29 | Mid | Within the boom, between CHES RW-3 and RCA-5 | Moderate to bright spots of sheen |
| 8/28/2015 | 12:20 | Low | Inside and outside boom, between CHES RW-3 and CHES RW-5 | Moderate dull spots of sheen |
| 9/16/2015 | 9:40 | Mid-High | Within the boom, near CHES RW-3 | Slight dull bands of sheen |
| 10/14/2015 | No sheens observed at high tide. | | | |
| 11/17/2015 | No sheens observed at high tide. | | | |
| 12/30/2015 | No sheens observed at high tide. | | | |
| 1/29/2016 | No sheens observed at mid tide. | | | |
| 2/22/2016 | 12:00 | Mid-High | Within Boom near CHES RW-3 | Slight sheen spots |
| 3/16/2016 | 8:30 | Mid-High | Within Boom between CHES RW-3 and CHES RW-5 | Minor sheening. Dull to bright streaks of sheen |
| 4/28/2016 | 3:30 | Mid-High | Within Boom near CHES RW-3 | Bright Plates/Streaks of Sheen |
| 5/19/2016 | 11:00 | Mid-Low | Within Boom near CHES RW-3 | Dull plates of sheen |
| 6/10/2016 | No sheens observed at mid-high tide. | | | |
| 7/26/2016 | 10:00 | Low | Within Boom near CHES RW-3 | Slight sheen |
| 8/30/2016 | 13:00 | Low | Inside and outside boom, between CHES RW-3 and CHES RW-5 | Plates of sheen |
| 9/16/2016 | 9:00 | High | Within Boom | Slight Sheen (Streaks) |
| 10/30/2016 | No sheens observed | | | |
| 11/30/2016 | 11:00 | Mid | Within Boom near CHES RW-3 | Platlets of sheen |
| 12/13/2016 | 11:45 | No sheen observed at low tide | | |

TABLE T-9
SUMMARY OF SHEEN OBSERVATIONS
642 Allens Avenue
Providence, Rhode Island

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|---------------------------------|--|---|--|
| 1/31/2017 | No sheens observed at mid tide | | | |
| 2/27/2017 | 9:00 | Mid-Low | Within Boom near CHES RW-3 | Streaks of sheen |
| 3/24/2017 | No sheens observed at high tide | | | |
| 4/28/2017 | No sheens observed at high tide | | | |
| 5/5/2017 | No sheens observed at high tide | | | |
| 6/30/2017 | No sheens observed at high tide | | | |
| 7/27/2017 | No sheens observed at high tide | | | |
| 8/1/2017 | 16:00 | High | Within Boom near CHES RW-3 | Some plates of sheen |
| 9/1/2017 | 12:50 | Mid | Within Boom near CHES RW-3 | Dull streaks of sheen |
| 9/29/2017 | 11:00 | Mid-High | Within Boom near CHES RW-3 | Some streaks of sheen |
| 10/24/2017 | No sheens observed at high tide | | | |
| 11/21/2017 | No sheens observed at high tide | | | |
| 12/21/2017 | No sheens observed at low tide | | | |
| 1/24/2018 | 13:00 | No sheens observed at high tide | | |
| 2/21/2018 | 12:00 | No sheens observed at high tide | | |
| 3/20/2018 | 11:00 | No sheens observed at high tide | | |
| 4/26/2018 | 7:00 | No sheens observed at high tide | | |
| 5/15/2018 | 14:00 | No sheens observed at low tide | | |
| 6/28/2018 | 14:00 | No sheens observed at low tide | | |
| 7/30/2018 | 13:00 | Mid | Along shoreline. | Some streaks of sheen, dull to bright plates |
| 8/30/2018 | 9:30 | Mid-high | Between hard boom and shore | Dull streaks of sheen |
| 10/1/2018 | 7:00 | Low | Between hard boom and shore | Bright streaks of sheen |
| 10/30/2018 | 10:30 | No sheens observed at mid tide | | |
| 11/14/2018 | 7:00 | No sheens observed at high tide | | |
| 12/19/2018 | 11:15 | Low tide | No sheens observed | |
| 1/30/2019 | 11:00 | Low tide | Between hard boom and shore proximate to former well RW-3 | Dull streaks of sheen |
| 2/27/2019 | 13:00 | Mid-high tide | Between hard boom and shore proximate to former well RW-3 | Dull plates and streaks of sheen |
| 3/20/2019 | 13:00 | Low | Between hard boom and shore proximate to former well RW-3 | Dull plates and bright streaks of sheen |
| 4/22/2019 | 11:00 | No sheens observed at high tide | | |
| 5/31/2019 | 7:00 | No sheens observed at high tide | | |
| 6/26/2019 | 15:00 | High | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 7/25/2019 | 14:30 | High | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 8/22/2019 | 13:00 | High | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 9/27/2019 | 7:00 | No sheens observed at high tide | | |
| 10/21/2019 | 14:30 | No sheens observed at high tide | | |
| 11/21/2019 | 10:00 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 12/18/2019 | 9:00 | No sheens observed at mid tide | | |
| 1/24/2020 | 8:30 | Mid Tide | Along shoreline proximate to former well RW-3. | Dull to bright plates of sheen |
| 2/24/2020 | 12:00 | No sheens observed at low tide | | |
| 3/26/2020 | 12:45 | No sheens observed at mid to high tide | | |
| 4/23/2020 | 8:00 | No sheens observed at high tide | | |
| 5/22/2020 | 8:45 | No sheens observed at high tide | | |
| 6/9/2020 | 15:00 | No sheens observed at mid to low tide | | |
| 7/17/2020 | 12:30 | Mid-low Tide | Along shoreline proximate to former well RW-3. | Slight dull to bright plates of sheen |
| 8/11/2020 | 7:15 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Large dull to bright plates of sheen |
| 8/20/2020 | 12:15 | No sheens observed at mid to low tide | | |
| 9/22/2020 | 9:00 | No sheens observed at mid to high tide | | |
| 10/26/2020 | 12:00 | No sheens observed at low tide | | |
| 11/24/2020 | 7:00 | No sheens observed at mid to high tide | | |
| 12/11/2020 | 10:37 | Low Tide | Between hard boom and shore proximate to former well RW-3 | Minor dull to bright plates of sheen |

TABLE T-9
SUMMARY OF SHEEN OBSERVATIONS
642 Allens Avenue
Providence, Rhode Island

| Date of Observation | Time of Observation | Approximate Tidal Stage | Approximate Location of Sheen Observed | Description of Sheen Observed |
|---------------------|---------------------|--------------------------------------|---|-------------------------------|
| 1/22/2021 | 13:37 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | |
| 2/9/2021 | 7:07 | High-tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 3/15/2021 | 8:54 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | |
| 4/20/2021 | 11:51 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | |
| 5/21/2021 | 13:14 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 6/23/2021 | 10:00 | Low-tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 7/26/2021 | 7:29 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Large bright plates of sheen |
| 8/13/2021 | 10:39 | High-tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 9/27/2021 | 10:10 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Minor dull plates of sheen |
| 10/18/2021 | 15:01 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | |
| 11/18/2021 | 12:10 | Low-tide | Between hard boom and shore proximate to former well RW-3 | |
| 12/20/2021 | 10:23 | High-tide | Between hard boom and shore proximate to former well RW-3 | |
| 1/21/2022 | 9:58 | No sheens observed at high tide | | |
| 2/17/2022 | 10:34 | Mid Tide | Between hard boom and shore proximate to former well RW-3 | Minor bright plates of sheen |
| 3/30/2022 | 9:00 | No Sheen observed at Low to Mid Tide | | |
| 4/27/2022 | 15:36 | Low Tide | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 5/5/2022 | 15:26 | High Tide | Between hard boom and shore proximate to former well RW-3 | Dull plates of sheen |
| 6/2/2022 | 14:26 | High Tide | Between hard boom and shore proximate to former well RW-3 | Some Dull plates of sheen |
| 7/7/2022 | 8:00 | No sheen observed at Low Tide | | |
| 8/18/2022 | 9:30 | No sheen observed at Mid Tide | | |
| 9/15/2022 | 9:30 | No sheen observed at Mid Tide | | |
| 10/1/2022 | 13:00 | No sheen observed at Mid Tide | | |
| 11/3/2022 | 12:30 | No sheen observed at Mid to Low Tide | | |

1. This table shows observations that were made along the Site shoreline. Observations were made least monthly.
2. Observations made on 9/22/2011 were made before containment boom was repaired. Boom was repaired on 10/28/2011.
3. Boom was repaired and the absorbent sausage boom was replaced on 8/2/2012.
4. Boom was repaired and sections of the absorbent sausage boom was replaced on 11/20/12.
5. Boom was repaired and sections of the absorbent sausage boom was replaced on 2/12/2013.
6. A water line directly proximate to the Providence River at the LNG facility unexpectedly failed on May 31, 2013. This water line provided fire protection for the LNG facility. Immediate response actions included deploying additional absorbent booms, repairing a rip-rap slope and temporarily repairing the line for fire protection. The water line was replaced in the fall of 2013. Additional boom was deployed on May 31, 2013 and June 3, 2013 after additional sheens were observed outside the original boom configuration.
7. Boom was repaired and sections of the absorbent sausage boom was replaced on 10/4/2013.
8. Absorbent boom replaced 3/20/14
9. Absorbent boom replaced 11/13/14
10. Hard Boom and absorbent boom was replaced on 4/9/15
11. Absorbent boom replaced 11/17/15
12. Absorbent boom replaced 3/3/16.
13. Absorbent boom replaced 7/13/16
14. Absorbent boom replaced 2/23/17.
15. Absorbent boom replaced 6/7/17.
16. Absorbent boom replaced 10/6/17.
17. Boom was damaged during a storm in 2018. Absorbent boom replaced 4/12/18.
18. Absorbent boom replaced 10/25/18.
19. Absorbent boom replaced 5/10/19.
20. Absorbent boom replaced 10/1/19.
21. Absorbent boom replaced 5/21/20.
22. Absorbent boom replaced 11/6/20.
23. Absorbent boom re-anchored 12/21/20.

TABLE T-10
SHEEN TPH FINGERPRINTING RESULTS
642 Allens Ave
Providence, Rhode Island

File No. 03.0033554.01
1/5/2024

| Total Petroleum Hydrocarbons | Units | Sheen-1 |
|------------------------------|-------|-------------------------------------|
| | | 06/05/2013 |
| TPH | mg/kg | 854 |
| TPH Fingerprint | | Fuel Oil / Tar / Parking Lot Runoff |


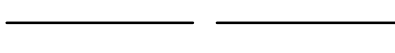









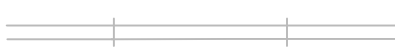
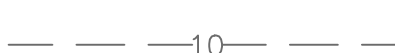



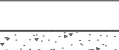



APPENDIX U

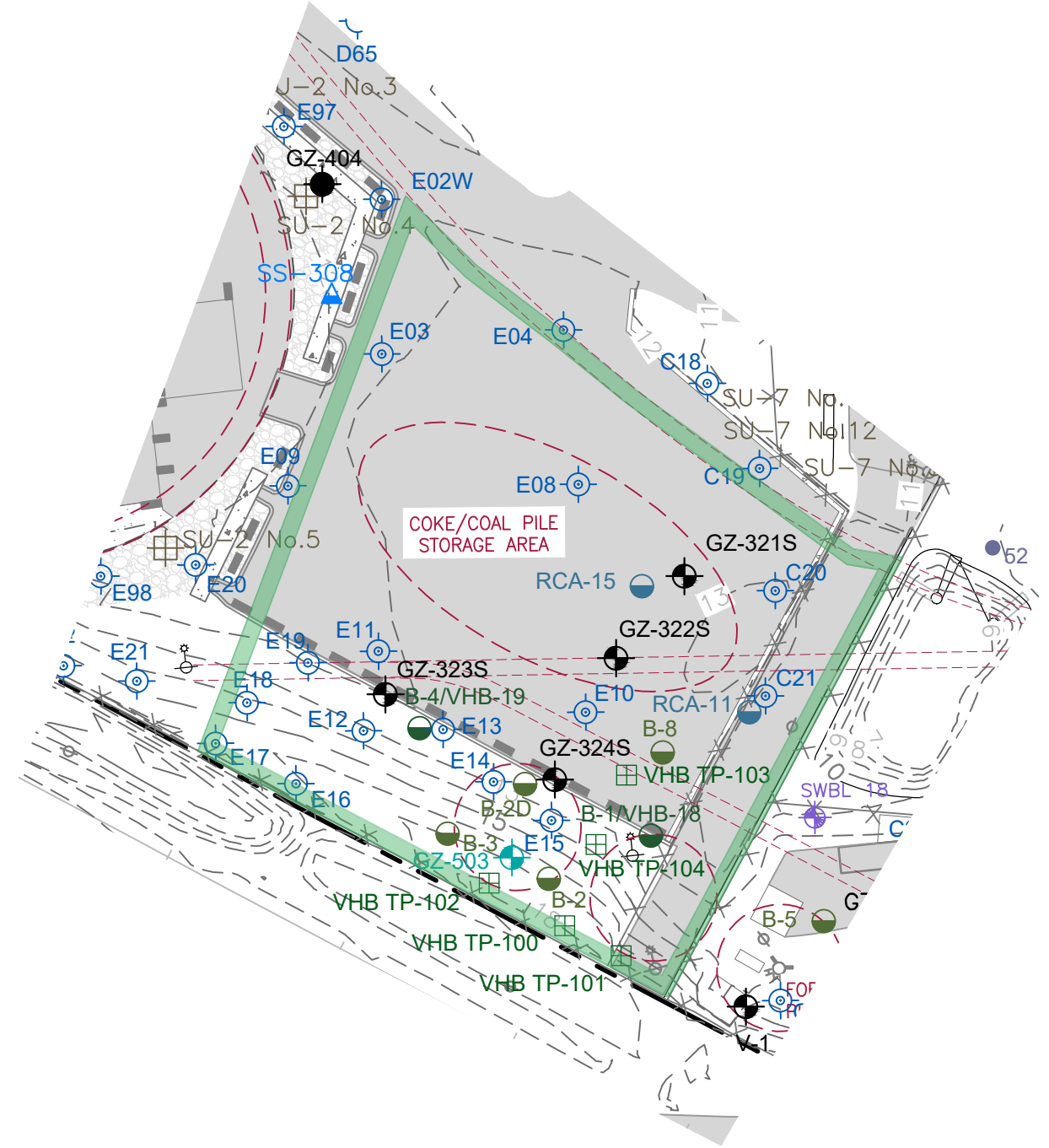
DATA GAP – OXIDE BOX AREA

2023 - GZA GeoEnvironmental, Inc. - GZA-VA-ENV-33554-01-SN-FIGURES-CAD-DWG-33554-01-SITE-INVESTIGATION-REPORT - ADDENDUM-DATA-GAP-DATA-DWG - OXIDE BOX AREA-DWG 1 MAY 31, 2023 3:03 PM LISA THERIAULT


LEGEND:

-  PROPERTY LINE
-  INTERIOR PROPERTY LINE
-  EXISTING BUILDING
-  UTILITY POLE
-  LIGHT POLE
-  UTILITY POLE WITH LIGHT
-  HYDRANT
-  STEEL POST
-  HISTORICAL STRUCTURE OR FEATURE
-  EDGE OF WATER
-  FENCE
-  RAILROAD TRACKS
-  EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
-  EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
-  EXISTING PAVEMENT
-  EXISTING CONCRETE
-  EXISTING RIP RAP
-  APPROXIMATE LIMIT OF LEAD UCLS IN THE FORMER GASHOLDER AREA DATA GAP

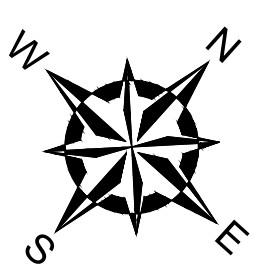
NOTE:
THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.





EXPLORATION LEGEND:

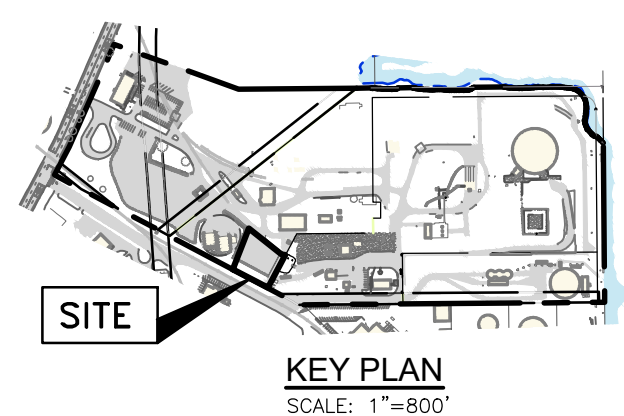
-  GZ-500 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021
-  GZ-401 ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015
-  GZ-314 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014
-  VHB-7 ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003
-  F47 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000
-  1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999
-  RHB-1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998
-  RCA-40 ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996
-  TP-301 ENVIRONMENTAL TEST PITS OBSERVED BY GZA IN 2014
-  VHB TP-101 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
-  TP-39 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
-  ETP-4 ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996
-  SS-301 SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014
-  VHB-SS2 SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003
-  SU-6 No.9 SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995
-  RSS-1 SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995
-  CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
-  RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
-  CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
-  ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
-  PRV-1 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019
-  B-211 GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016
-  GZ-3 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016
-  PP-2 GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015
-  SB-01 GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WA) IN 2015
-  GZA-206 GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
-  GZ-1 GEOTECHNICAL BORING OBSERVED BY GZA IN 2004
-  SWBL13 GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995
-  B-207 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973
-  B-25 GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972
-  PG-8 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912
-  W155 CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999

**DRAFT COPY
ISSUED FOR REVIEW**



THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE NARRAGANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

| | | | |
|--|--|---|--|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | | | |
| DATA GAP: EXPLORATION LOCATION PLAN OXIDE BOX AREA | | | |
| PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | | PREPARED FOR:  Rhode Island Energy <small>an tnecc.com</small> | |
| PROJ MGR: SH DESIGNED BY: SH DATE: JUNE 2023 | REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO.: 33554.01 | CHECKED BY: JJC SCALE: AS NOTED REVISION NO.: 0 | DRAWING U-1 SHEET NO. 1 OF 1 |



RESOURCE CONTROLS

PROJECT: Providence Gas Company
 PROJECT NO.: A2000
 LOCATION: 642 Allens Avenue, Providence, R.I.
 DRILLING CO.: American Drilling, Inc.
 DRILLED BY: Jim Campbell
 INSPECTED BY: Daniel Lanier

TEST BORING LOG

BORING NO. RCA-11
 PAGE 1 OF 1
 DATE STARTED: 9/9/94
 DATE FINISHED: 9/12/94
 SURFACE ELEVATION:

GROUNDWATER OBSERVATIONS

| DEPTH | STABILIZATION TIME |
|-------|--------------------|
| | |

CASING SAMPLER

TYPE: Split Spoon
 SIZE I.D.: 1-3/8"
 HAMMER WT.: 140 lbs.
 HAMMER FALL: 30 in.

| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) SAND and GRAVEL | FIELD TEST DATA PID - 10.2 eV (ppm) |
|-------------|--------------------------------|-------------|----------------|--------------------|-----------|--|--|-------------------------------------|
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | |
| 5' | 1' | S-1 | NA | Grab | | dry, green, fine SAND | 11.1 | |
| | 2-4 | SS-1 | 100% | 5-8-5-8 | | SAME, damp | 8.3 | |
| | 4-6 | SS-2 | 90% | 3-4-4-6 | | sand | 14 | |
| 10' | 6-8 | SS-3 | 85% | 5-6-6-7 | | SAME | 6.9 | |
| | 8-10 | SS-4 | 70% | 4-3-2-3 | | SAME, little fine sand | 12.2 | |
| | 10-12 | SS-5 | 80% | 2-3-7-9 | | brown medium SAND, some fine sand, little silt (brass liner) | 27.8 | |
| 15' | 12-14 | SS-6 | 100% | 10-10-12-15 | | brown, medium SAND, little fine sand | 62.3 | |
| | 14-16 | SS-7 | 100% | 3-9-11-12 | | SAME | | |
| 20' | | | | | | Bottom of exploration at 16' | | |
| 25' | | | | | | | | |
| 30' | | | | | | | | |

GENERAL REMARKS: 10' 0.020"-slot EFG screen
 8-1/2" borehole
 HSA/ boring
 #2 silica sand pack
 2'-10" standpipe

2000DRL.LOG

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: C19

Date: 1/11/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: N/D

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1600 | 1.0 | (0-4") Roots, gravel, brown M sand, SO brick. (4-8") M sand SO roots, SO silt. (8-10") Band of coal ash. (10-24") M/C gravel, M silty sand, teal colored sand with large stones and M light brown/tan silty sand. |
| B | 2-4 | 24/48 | | 0.0 | (48-72") Misc. M black sandy silt with gravel or sandy silt; cinders 42-48". |
| C | 4-6 | 24/48 | 1610 | 2.1 | |
| D | 6-8 | 24/48 | | 2.1 | (96-120") Large gravel with brown/orange sand; heavily oxidized. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

Depth to groundwater could not be determined due to poor recovery. N/D = not determined

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | N/A | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: C20

Date: 1/11/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 5.0'

Depth to Water: 5.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1020 | 1.4 | (0-2") Dark brown M sand. (2-6") Dark brown M sand and small stones mixed with cinder ash. (6-12") Dark brown/black M sand, small rounded stones. (12-24") M light green, yellow sand mixed with cinder ash; iron staining. |
| B | 2-4 | 34/48 | | 0.0 | (24-26") M brown sand, small stones. (26-60") M Green/yellow sand with gravel bits and small rounded stones and SO large gravel deposits of green and black spots at 4.5-5.0'; wet at 58"; refusal at 60". No sample at this time. |
| C | 4-6 | | 1045 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| | | | | | |
| G | 12-14 | | | | |

Comments:

Four borings attempted, refusal at 3 locations approximately 1' below ground surface

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|-----------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. |
| LITTLE (LJ) 10-20% | M = MEDIUM | | G = 144-168 in. |
| SOME (SO) 20-35% | C = COARSE | | B = 24-48 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | H = 168-192 in. |
| | F/C = FINE TO COARSE | | C = 48-72 in. |
| | M/C = MEDIUM TO COARSE | | I = 192-216 in. |
| | | | D = 72-96 in. |
| | | | J = 216-240 in. |
| | | | E = 96-120 in.. |
| | | | K = 240-264 in. |
| | | | F = 120-144 in. |
| | | | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|---|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI ESS Job No: P151-002 | Boring No.: C21 Date: 1/11/00 Within 100' of Water: No |
| Driller.: Environmental Drilling, Inc. | Instrument: Thermo Environment Instruments, Inc., Model 580B OVM |
| Well Diameter: N/A | Boring Depth: 10.0' |
| Drilling Method: Geoprobe | Depth to Water: 3.5' |
| Sample Method: 4' Acetate Sampler | Logged By: Nicole Murry |

| Depth (Intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1105 | 1.4 | (0-2") M brown sand. (2-6") Cinder ash with SO brown M sand and gravel. (6-24") F/M silty sand, stained light tan/light blue; moist at 20". |
| B | 2-4 | 36/48 | | 0.0 | (36-48") F/M silty sand, stained light tan/light blue; moist. (48-72") F/M light brown sand; saturated 40". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 36/48 | 1134 | 0.0 | |
| E | 8-10 | | | | (72-76") Remnants of F/M silty sand stained, light blue. (76-120") M green/brown sand, dense, with SO small rounded stones. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:
located near well number RCA 11.

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--|--|-------------------|--|
| TRACE (TR) 0-10% LITTLE (LJ) 10-20% SOME (SO) 20-35% AND 35-50% | F = FINE M = MEDIUM C = COARSE F/M = FINE TO MEDIUM F/C = FINE TO COARSE M/C = MEDIUM TO COARSE | N/A | A = 0-24 in. G = 144-168 in. B = 24-48 in. H = 168-192 in. C = 48-72 in. I = 192-216 in. D = 72-96 in. J = 216-240 in. E = 96-120 in.. K = 240-264 in. F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



: West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E03

Date: 12/13/99

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 4.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1148 | 0.0 | (0-2") M brown sand. (2-12") M black sand with large bits of condensed cinder ash. (12-24") F brown/orange silty clay with specs of black bits throughout strata. |
| B | 2-4 | 30/48 | 1200 | 0.0 | (42-44") F/M sand; brown brick with black specs of coal/ash. (44-48") coal ash. (48-72") saturated brown silty sand. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 48/48 | | 0.0 | (72-76") brown silty sand; saturated. (76-78") black coal bits with brown sandy silt; saturated. (78-120") brown silty sand; saturated. |
| E | 8-10 | | | 0.0 | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E04

Date: 12/13/99

Within 100' of Water: No

Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM

Boring Depth: 10'

Depth to Water: 6.5'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1220 | 2.8 | (0-2") F/M brown sand and gravel. (2-12") black coal ash with large bits of gravel and coal throughout; SO brick. (12-20") F/M light brown/tan/orange/brown sand. (20-24") F/M orange/brown sand. |
| B | 2-4 | 30/48 | | 0.7 | (42-50") F/M orange/brown sand. (50-53") black coal ash band with mix of orange/brown sand. (53-72") F/M light orange/brown sand with specs of black ash; small stones throughout. (40-48" moist band). |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 48/48 | 1240 | 2.5 | |
| E | 8-10 | | | 0.0 | (72-74") same as above with porous cinders. (74-76") black band with cinders; SO ash and coal. (76-120") F light orange and brown silty sand; saturated. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI

ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E08

Date: 12/14/99

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 3.5'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 0906 | 0.0 | (0-2") M brown sand. (2-8") black sand with cinder ash. (8-24") light tan/light brown silty sand with bits of small stone. (22-24") M gravel and light brown silty sand. |
| B | 2-4 | 48/48 | 0914 | 0.0 | (24-30") M gravel and light brown silty sand with bits of coal. (30-36") F to silty light brown sand with SO small stones; moist. (36-72") silty brown sand with SO rounded gravel; porous cinders at 36-40"; saturated at 40". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 48/48 | | 0.0 | |
| E | 8-10 | | | 0.0 | (72-74") silty brown sand with SO rounded gravel; (74-76") cinder ash stone. (76-84") M/C brown sand with small rounded stones. (84-120") silty brown sand; dense; saturated. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

PROPORTIONS USED

TRACE (TR) 0-10%
LITTLE (LJ) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

Well Construction

DEPTH INTERVALS

A = 0-24 in. G = 144-168 in.
B = 24-48 in. H = 168-192 in.
C = 48-72 in. I = 192-216 in.
D = 72-96 in. J = 216-240 in.
E = 96-120 in. K = 240-264 in.
F = 120-144 in. L = 264-288 in.

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E09

Date: 12/14/99

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 4.5'

Logged By: Daryll Issa/Nicole
Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 0828 | 1.4 | (0-4") F/M light brown to brown sand; dry; no odor. (4-8") F/M dark red cinders; dry; no odor. (8-24") F/M gray/blue sand; dry; no odor. |
| B | 2-4 | 41/48 | 0845 | 0.0 | (28-32") F/M dark brown and blue sand; dry; no odor. (32-48") F tan sand; dry; no odor. (48-72") F/M tan sand and silt; saturated with water from 55-72"; no odor. |
| C | 4-6 | | | 1.4 | |
| D | 6-8 | 48/48 | | 0.0 | (72-96") F/M light brown silt and sand with LI oxidation; saturated with water; no odor. (96-120") F/M silt and sand with SO oxidation and SO gravel; saturated with water; no odor. |
| E | 8-10 | | | 1.4 | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E10

Date: 12/14/99

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 3.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 0950 | 0.0 | (0-2") F/M brown sand. (2-6") cinder ash with brown sand. (6-12") silty brown sand. (12-24") silty brown sand; saturated. (Surficial Runoff). |
| B | 2-4 | 40/48 | 1000 | 0.0 | (32-34") silty brown sand; saturated. (34-36") cinder ash band. (36-72") silty brown sand; dense; saturated. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:
Surficial runoff in proximity to boring location.

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E11

Date: 12/14/00

Within 100' of Water: No

Instrument: Thermo Environmer.
Instruments, Inc., Model 580B OVI

Boring Depth: 6.0'

Depth to Water: 3.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1345 | 0.0 | (0-4") brown sand with M gravel. (4-10") M black sand with cinder ash and cinder stone. (10-14") F/M light brown sand with SO small gravel. (14-24") silty brown sand; dense; porous cinders at 20-24". |
| B | 2-4 | 42/48 | 1405 | 0.0 | (30-32") silty brown sand; dense. (32-34") M black sand with SO cinder ash. (34-72") brown/light brown silty sand; dense; saturated. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E12 |
| ESS Job No: P151-002 | Date: 12/14/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: 3.0' |
| | Logged By: Nicole Murry |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1410 | 0.0 | (0-4") M brown sand with SO cinder ash and SO cinder ash rock. (4-24") light brown silty sand; dry. |
| B | 2-4 | 48/48 | 1425 | 0.0 | (24-28") light brown silty sand; dry. (28-72") dense brown silty sand; saturated at approximately 36". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: E13
Date: 12/14/00
Within 100' of Water: No
Instrument: Thermo Environment
Instruments, Inc., Model 580B OVM
Boring Depth: 6.0'
Depth to Water: 5.0'
Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1445 | 0.0 | (0-4") M brown sand with cinder ash. (4-24") light tan and pink with SO M/large stones and SO coal; M yellow/brown sand with M rounded stones. |
| B | 2-4 | 48/48 | 1455 | 0.0 | (24-26") M light pink sand with stone. (28-30") M brown sand. (30-60") M brown sand with large gravel; oxidized. (60-72") silty brown sand; dense; saturated at 60". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LJ) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
 642 Allens Avenue, Providence, RI
 ESS Job No: P151-002
 Driller.: Environmental Drilling, Inc.
 Well Diameter: N/A
 Drilling Method: Geoprobe
 Sample Method: 4' Acetate Sampler

Boring No.: E14
 Date: 12/15/00
 Within 100' of Water: No
 Instrument: Thermo Environmental
 Instruments, Inc., Model 580B OVM
 Boring Depth: 6.0'
 Depth to Water: 4.0'
 Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1140 | 0.0 | (0-4") M brown sand with M black gravel. (4-6") cinder ash. (6-12") large gravel and light brown sand with bits of coal and gravel. (12-24") M light tan sand. |
| B | 2-4 | 48/48 | 1155 | 0.0 | (24-26") M light tan sand. (26-28") M brown sand with SO cinder. (28-48") M yellow sand and gravel. (48-60") large brown/yellow sand with gravel; wet. (60-72") silty brown sand with gravel; wet. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 42/48 | | 0.0 | (78-84") M gravel with M sand; wet. (84-96") M/large brown gravel; saturated. (96-120") iron oxidation; large gravel. |
| E | 8-10 | | | 0.0 | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: E15
Date: 12/15/99
Within 100' of Water: No
Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM
Boring Depth: 6.0'
Depth to Water: Not determined
Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1520 | 14.1 | (0-20") F/M blue stained sand and wood chips with F/C tan sand mixed in; dry; strong odor. (20-24") F/M dark blue sand with SO gravel; dry; odor present. |
| B | 2-4 | 36/48 | | 263 | (36-42") F/M light blue sand and silt; dry; heavy odor. (42-72") F/M blue stained sand, silt, and gravel; dry; heavy odor. Refusal at 72". |
| C | 4-6 | | 1530 | 939 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: E16

Date: 12/15/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 3.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1325 | 0.0 | (0-8") F/M dark-brown sand. (8-24") F/silty light brown sand with SO gravel. |
| B | 2-4 | 48/48 | 1335 | 0.0 | (24-72") F/silty light brown sand with SO gravel; saturated at approximately 36%. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101
 Providence, Rhode Island 02903
 (401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
 642 Allens Avenue, Providence, RI
 ESS Job No: P151-002
 Driller.: Environmental Drilling, Inc.
 Well Diameter: N/A
 Drilling Method: Geoprobe
 Sample Method: 4' Acetate Sampler

Boring No.: E17
 Date: 12/15/00
 Within 100' of Water: No
 Instrument: Thermo Environment
 Instruments, Inc., Model 580B OVM
 Boring Depth: 6.0'
 Depth to Water: 4.5'
 Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1345 | 0.0 | (0-8") M brown sand with roots and organics; leaves. (8-24") F silty light brown sand. |
| B | 2-4 | 40/48 | 1355 | 0.0 | (32-48") F silty light brown sand. (48-72") F silty light brown sand; saturated at approximately 40%. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



? West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler


Boring No.: E18
Date: 12/15/99
Within 100' of Water: No
Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Boring Depth: 6.0'
Depth to Water: 3.0'
Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1410 | 0.0 | (0-4") M brown sand; SO organics; roots. (4-10") M/large brown/orange sand with gravel. (10-24") dense silty brown sand; dry. |
| B | 2-4 | 40/48 | 1420 | 0.0 | (32-36") M brown sand with gravel. (36-72") dense silty brown sand; saturated at 36". |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |
| | | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG

| | | |
|---|---|--|
|  272 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: E19 |
| | ESS Job No: P151-002 | Date: 12/15/99 |
| | Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| | Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| | Drilling Method: Geoprobe | Boring Depth: 6' |
| | Sample Method: 4' Acetate Sampler | Depth to Water: 4.5' |
| | | Logged By: Daryll Issa/Nicole Murry |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1438 | 0.0 | (0-10") M brown to black sand; dry; no odor. (10-12") black cinder ash and black cinders with M brown to black sand; dry; no odor. (12-15") M light brown sand with SO gravel; dry; no odor. (15-17") cinder ash and black cinders. (17-24") F/silty brown sand; dry. |
| B | 2-4 | 36/48 | 1450 | 0.0 | (36-40") F/M brown/dark brown sand with gravel mixed in; dry; no odor. (40-52") F/M light brown silt and sand; damp; no odor. (52-72") F/M brown silt and sand; saturated with water; no odor. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------------------|------------------------|-------------------|---|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |


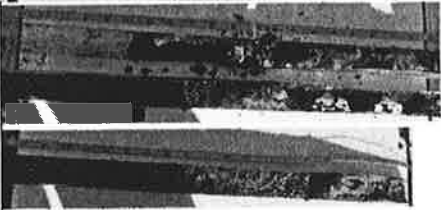
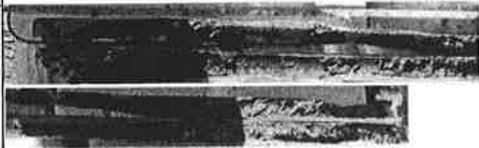
Soil Boring Report

PROJECT **Avenue** **New England Gas Company** **642 Allans**
Providence, Rhode Island

Report of Boring No. **B-1**
 Well ID: **VHB-18**
 Job Number: **71274** Sheet 1 of 1

Drilling Company: **NE Geotech** Boring Location: **South-central portion of Site**
 Driller: **Claude Masse / Chris Mazzolini** Elevation: **NA** Datum: **NA**
 Inspector: **Claude Masse / Chris Mazzolini** Start Date: **1/21/2003** End Date: **1/21/2003**

The borings were advanced by vibratory direct push technology using a Geoprobe System.

| Depth (ft) | PID Reading | Sample No. | Pen/Rec (ft) | Blows/ft* | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|--------------|-----------|--|---|
| 0 - 4 | 6,364 | S-1 | 4 / 3,5 | NA | Approx. 1.5 feet of Tan f/m sand and gravel, redoximorphic concentrations, dry over approx. 0.5 feet of dark brown/tan f/m sand and silt and gravel over 0.5 feet of drak gray f/m sand and silt, redoximorphic concentrations, strong odor (PID 2,775 ppm), dry, over approx. 0.25 feet of black f/m sand and silt, wood chips, strong odor (PID 6,364 ppm). |  |
| 4 - 8 | 1,001 | S-2 | 4 / 4 | NA | Approx. 0.25 feet of brown/black f/m sand and silt, brick fragments, moist over approx. 0.75 feet of black/dark green fine sand, little silt, concrete fragment, odor (PID 1,001 ppm) over approx. 0.5 feet of black f sand with silt, black-stained wood chips, odor over approx. 0.5 feet of gray, f/m sand, some gravel, redoximorphic concentrations, odor (PID 407 ppm) over approx. 0.75 feet of tan c sand, little black staining, odor, wet. |  |
| 8 - 12 | 66.2 | S-3 | 4 / 4 | NA | Approx. 2.5 feet of brown f/c sand and gravel, wet, odor (PID 66.2 ppm) over approx. 1.5 feet of white/tan c sand, redoximorphic concentrations, no odor (PID 9.3) |  |
| 12 - 16 | | S-4 | 4 / 4 | NA | white/tan c sand, redoximorphic concentrations, no odor | No Photo Available. |
| | | | | | | Bottom of exploration 16' below grade. |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|---------------------------------|----------|---------------------------------|----------|-------------|----------|--|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grain size. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

Soil Boring Report

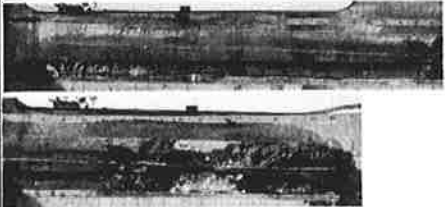
PROJECT Avenue New England Gas Company 642 Allens Providence, Rhode Island

Report of Boring No. B-2
Well ID: NA
Job Number: 71274 Sheet 1 of 1

Drilling Company: NE Geotech
Driller:
Inspector: Claude Masse / Chirs Mazzolini

Boring Location: South-central portion of Site
Elevation: NA Datum: NA
Start Date: 1/21/2003 End Date: 1/21/2003

The borings were advanced by vibratory direct push technology using a Geoprobe System.

| Depth (ft) | PID Reading | Sample No. | Pan/Rec | Blows/5' | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|----------|---|---|
| 0 - 4 | 133 | S-1 | 4 / 4 | NA | Approx. 1 foot of white/tan f/c sand, frozen, over approx. 1.5 feet of dark green f/m sand and gravel, some redoximorphic concentrations, some blue staining over approx. 0.5 feet of f/m sand with distinct redoximorphic concentrations, concrete chips over approx. 0.5 feet of gray/blue-stained f/m sand, moist, odor (PID 133 ppm) over wood fragments. Refusal at 4 ft. BSG. |  |
| | | | | | | Bottom of exploration 4' below grade. |
| | | | | | | |
| | | | | | | |
| | | | | | | |
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| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|---------------------------------|----------|---------------------------------|---------|-------------|----------|---|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Siff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Siff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Siff | | | |
| | | >30 | Hard | | | |

| | | | | | | |
|---|--|--|--------|---|---------------|---------------------------|
| Soil Boring Report | | PROJECT | Avenue | New England Gas Company Providence, Rhode Island | 542 Athens | Report of Boring No. B-2B |
| | | Well ID: NA | | Job Number: 71274 | Sheet 1 of 1 | |
| Drilling Company: NE Geotech | | Boring Location: Approx. 6 inches north of B-2 | | | Elevation: NA | |
| Driller: | | Start Date: 1/21/2003 | | | Datum: NA | |
| Inspector: Claude Masse / Chris Mazzolini | | End Date: 1/21/2003 | | | | |

The borings were advanced by vibratory direct push technology using a Geoprobe System.


| Depth (ft) | PID Reading | Sample No. | Pen./Res. | Blows/ft | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|-----------|----------|---|---------------------------------------|
| 0 - 4 | | S-1 | 4 / 4 | NA | Approx. 1 foot of white/tan f/m sand, frozen, over approx. 1.5 feet of dark green f/m sand and gravel, some redoxomorphic concentrations, some blue staining over approx. 0.5 feet of f/m sand with distinct redoxomorphic concentrations, concrete chips over approx. 0.5 feet of gray/blue-stained f/m sand, moist, odor (PID 133 ppm) over wood fragments. Refusal at 4 ft. BSG. | No Photo Available. |
| | | | | | | Bottom of exploration 4' below grade. |
| | | | | | | |
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| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|---------------------------------|----------|---------------------------------|----------|-------------|----------|--|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grain size. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 560B 10.eV photoionization detector (PID). |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| 50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

| | | | | | | |
|---------------------------|----------------|--------|---|------------|----------------------|-------|
| Soil Boring Report | PROJECT | Avenue | New England Gas Company Providence, Rhode Island | 642 Allens | Report of Boring No. | B-2C |
| | | | | | Well ID: | NA |
| | | | | | Job Number: | 71274 |
| | | | | | Sheet 1 of 1 | |

| | | | |
|-------------------|--------------------------------|------------------|-------------------------------|
| Drilling Company: | NE Geotech | Boring Location: | Approx. 6 inches south of B-2 |
| Driller: | | Elevation: | NA |
| Inspector: | Claude Masse / Chris Mazzolini | Start Date: | 1/21/2003 |
| | | Datum: | NA |
| | | End Date: | 1/21/2003 |

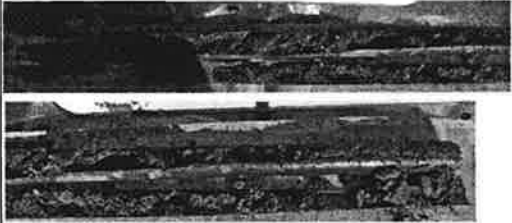

The borings were advanced by vibratory direct push technology using a Geoprobe System.

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/ft | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|----------|---|---|
| 0 - 4 | | S-1 | 4 / 4 | NA | Approx. 1 foot of white/tan f/c sand, frozen, over approx. 1.5 feet of dark green f/m sand and gravel, some redoximorphic concentrations, some blue staining over approx. 0.5 feet of f/m sand with distinct redoximorphic concentrations, concrete chips over approx. 0.5 feet of gray/blue-stained f/m sand, moist, odor (PID 133 ppm) over wood fragments. Refusal at 4 ft. BSG. | No Photo Available. |
| 4 - 8 | 2,102 | S-2 | 4 / 2.5 | NA | Approx. 1 foot of dark brown/black f/m sand and silt, wood chips over approx. 1.5 feet of black f sand, strong odor (PID 2,102) moist, slight sheen on soil. Refusal at 6.5 feet |  |
| | | | | | | Bottom of exploration 8' below grade. |
| | | | | | | |
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| | | | | | | |
| | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|---------------------------------|----------|---------------------------------|----------|-------------|----------|--|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photolionization detector (PID). |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

| | | | | | | | |
|------------------------------|--|---|--|---|--|---------------------------|--|
| Soil Boring Report | | PROJECT | | 642 Allens | | Report of Boring No. B-2D | |
| | | Avenue | | New England Gas Company Providence, Rhode Island | | Well ID: NA | |
| Drilling Company: NE Geotech | | Inspector: Claude Masse / Chris Mazzolini | | Boring Location: Approx. 20 feet northwest of B-2 | | Job Number: 71274 | |
| Driller: | | | | Elevation: NA | | Datum: NA | |
| | | | | Start Date: 1/21/2003 | | End Date: 1/21/2003 | |
| | | | | | | Sheet 1 of 1 | |

The borings were advanced by vibratory direct push technology using a Geoprobe System.

| Depth (ft) | PID Reading | Sample No. | Perv/Rec | Blows/ft | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|----------|----------|---|---|
| 0 - 4 | ND | S-1 | 4 / 4 | NA | Approx. 1 foot of white sand, some gravel over 3 feet of tan/brown/orange f/m sand, gravel, no odor. | No Photo Available. |
| 4 - 8 | 1,317 | S-2 | 4 / 4 | NA | Approx 1 foot of tan/orange m/c sand with silt and gravel over approx. 1 foot of gray/black/green f/m sand, sheening, odor (PID 1,317 ppm), over approx. 2 feet of orange m/c sand with silt, gravel, odor, moist to wet. |  |
| 8 - 12 | 17 | S-3 | 4 / 3 5 | NA | Approx. 1 foot of it. Gray m/c sand, gravel, wet, no odor over approx. 1.5 feet of orange, m/c sand, gravel, wet, no odor (PID 17 ppm). |  |
| | | | | | | Bottom of exploration 12' below grade |
| | | | | | | |
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| | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|---------------------------------|----------|---------------------------------|----------|-------------|----------|---|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 560B 10.eV photoionization detector (PID). |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

Soil Boring Report





PROJECT Avenue **New England Gas Company** **642 Allens**
Providence, Rhode Island

Report of Boring No. **B-3**
 Well ID: **NA**
 Job Number: **71274** Sheet 1 of 1

Drilling Company: **NE Geotech**
 Driller:
 Inspector: **Claude Masse / Chris Mazzolini**

Boring Location: **South-central portion of the Site**
 Elevation: **NA** Datum: **NA**
 Start Date: **1/21/2003** End Date: **1/21/2003**

The borings were advanced by vibratory direct push technology using a Geoprobe System.

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/ft* | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|-----------|---|---|
| 0 - 4 | 15 | S-1 | 4 / 4 | NA | Approx. 1.25 feet of dark brown f/m sand and silt, gravel, no odor over approx. 2.25 feet of lt. Gray f/m sand with trace of green staining and yellow redoximorphic concentrations, woodchips at 2 ft bsg, and gravel. |  |
| | | | | | |  |
| 4 - 8 | | S-2 | 4 / 2 | NA | Approx. 1 foot of c sand and gravel with yellow redoximorphic concentrations, moist, over approx. 1 foot of orange c sand and gravel, wet. |  |
| 8 - 12 | | S-3 | 4 / 3 | NA | Approx. 1 foot of brown/dark brown f/m sand and gravel, wet over approx. 3 feet of brown f/c sand and gravel, wet. |  |
| | | | | | | Bottom of exploration 12' below grade. |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | PROPORTIONS | Notes |
|---------------------------------|---------------------------------|-----------------|---|
| 0 - 4 V. Loose | <2 V. Soft | Trace 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10-eV photololization detector (PID). |
| 4 - 10 Loose | 2 - 4 Soft | Little 10 - 20% | |
| 10 - 30 M. Dense | 4 - 8 M. Stiff | Some 20 - 35% | |
| 30 - 50 Dense | 8 - 15 Stiff | And 35 - 50% | |
| >50 V. Dense | 15 - 30 V. Stiff | | |
| | >30 Hard | | |

Soil Boring Report

PROJECT Avenue **New England Gas Company** 642 Allens
Providence, Rhode Island

Report of Boring No. **B-4**


Well ID: **VHB-19**

Job Number: **71274** Sheet 1 of 1

Drilling Company: **NE Geotech**
 Driller:
 Inspector: **Claude Masse / Chris Mazzolini**

Boring Location: **South-central portion of the Site**
 Elevation: **NA** Datum: **NA**
 Start Date: **1/21/2003** End Date: **1/21/2003**

The borings were advanced by vibratory direct push technology using a Geoprobe System.

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/ft | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|----------|---|---|
| 0 - 4 | 3.6 | S-1 | 4 / 4 | NA | Approx. 1 foot of dark gray f/m sand and silt, redoximorphic concentrations, woodchips at 1 foot bsg, over approx. 0.5 feet of ft. Tan f sand and silt, some blue/green staining over approx. 0.5 feet of ft. Tan vf sand and silt over approx. 1 foot of tan m/c sand and gravel over approx. 1 foot of brown/lt. tan vf sand and silt, no odor. |  |
| 4 - 8 | 4.3 | S-2 | 4 / 4 | NA | brown/lt. tan vf sand and silt, no odor, wet 7-8 ft. bsg. | No Photo Available. |
| 8 - 12 | | S-3 | 4 / 0.5 | NA | brown/lt. tan vf sand and silt, no odor, wet 7-8 ft. bsg. | No Photo Available. |
| | | | | | | Bottom of exploration 12' below grade. |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|---------------------------------|----------|---------------------------------|---------|-------------|----------|--|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grain size. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Siff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Siff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Siff | | | |
| | | >30 | Hard | | | |

| | | | | | | |
|---|--|--|--------|---|---------------------|--------------------------|
| Soil Boring Report | | PROJECT | Avenue | New England Gas Company Providence, Rhode Island | 642 Allens | Report of Boring No. B-8 |
| | | | | | | Wall ID: NA |
| Drilling Company: NE Geotech | | Boring Location: South-central portion of the Site | | | Job Number: 71274 | Sheet 1 of 1 |
| Driver: | | Elevation: NA | | | Datum: NA | |
| Inspector: Claude Masse / Chris Mazzolini | | Start Date: 1/22/2003 | | | End Date: 1/22/2003 | |

The borings were advanced by vibratory direct push technology using a Geoprobe System.

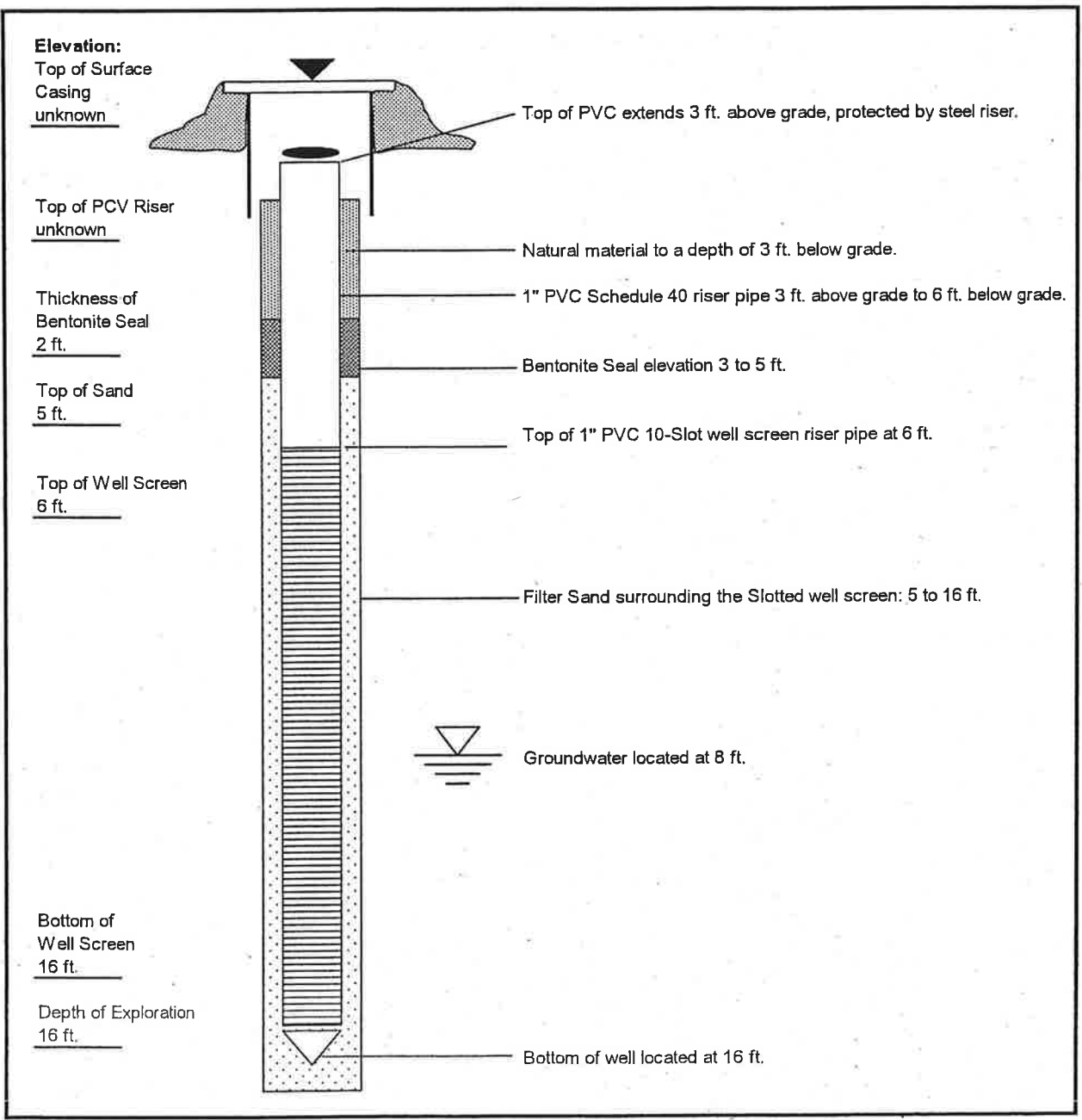
| Depth (ft) | PID Reading | Sample No | Pen/Rac | Blower* | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|-----------|---------|---------|--|-------------------------------------|
| 0 - 4 | 178 | S-1 | 4 / 4 | NA | Approx. 2.5 feet of dark brown/black f/m sand (appears to be fragments of wood chips at approx. 1-2 feet bag), odor (PID 178 ppm) over approx. 1.5 feet of tan/orange f sand, redoximorphic concentrations, moist, no odor (PID 8 ppm) | No Photo Available. |
| 4 - 8 | 4.3 | S-2 | 4 / 4 | NA | Approx. 1 foot of tan f sand, moist over approx. 3 feet of brown/orange c sand (top 3 inches has prominent redoximorphic concentrations), gravel, no odor (PID 4.3 ppm) | No Photo Available. |
| 8 - 11 | 2.3 | S-3 | 3 / 3 | NA | Approx. 3 feet of brown/orange c/m sand and gravel, wet, no odor. | No Photo Available. |
| | | | | | | Bottom of operation 11' below grade |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| GRANULAR SOILS BLOW/FT DENSITY | COHESIVE SOILS BLOW/FT DENSITY | PROPORTIONS | Notes |
|--------------------------------|--------------------------------|-----------------|---|
| 0 - 4 V Loose | <2 | Trace 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grain size. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID) |
| 4 - 10 Loose | 2 - 4 | Little 10 - 20% | |
| 10 - 30 M Dense | 4 - 8 | Some 20 - 35% | |
| 30 - 50 Dense | 8 - 15 | And 35 - 50% | |
| >50 V Dense | 15 - 30 | | |
| | >30 | Hard | |

N6

VHB Monitoring Well Diagram

Project Name: New England Gas Project No. 71274 Date: 21-Jan-03
Location: 642 Allens Ave Contractor: New England Geotech Well No. VHB-18
Providence, RI Scientist: C. Masse/C. Mazzolini GW Depth: Approx. 8 Feet



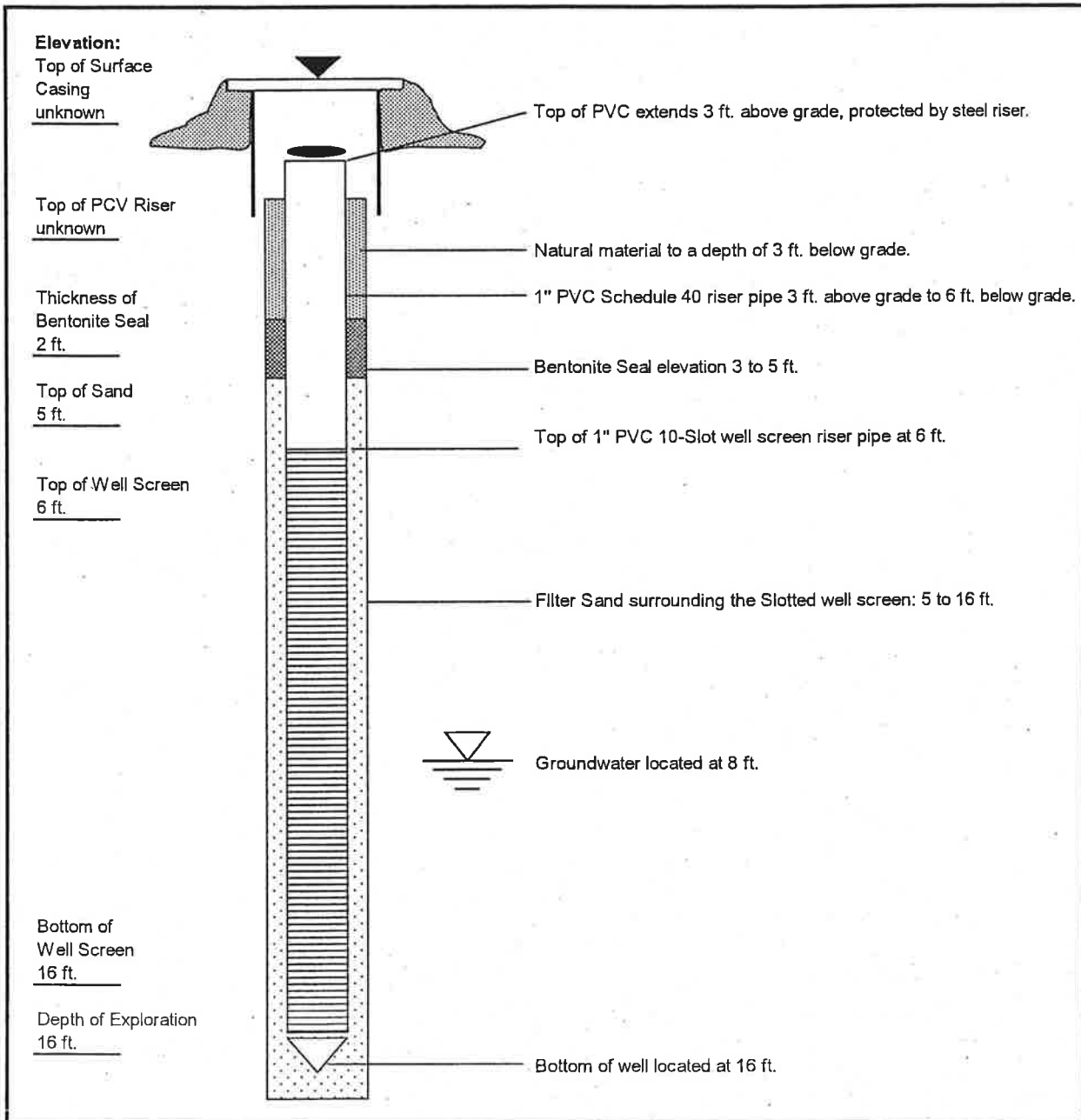
N6

VHB Monitoring Well Diagram

Project Name: New England Gas
Location: 642 Allens Ave
Providence, RI

Project No. 71274
Contractor: New England Geotech
Scientist: C. Masse/C. Mazzolini

Date: 21-Jan-03
Well No. VHB-19
GW Depth: Approx. 8 Feet





Project: Oxide Box Area

Date: 11/5/08

Test Pit Location: 642 Allens Avenue

Ground Surface Elevation: Not Surveyed

Equipment Used: Case Backhoe

Contractor: Clean Harbors Environmental Services

Test Pit Dimension (LxWxD): 6 ft.x3 ft.x5 ft.

Logged By: CM

Weather: P. Cloudy, ~55°F

Depth to Water: Not encountered

| DEPTH (feet) | Sample No. | Excavation Effort | OVM Reading (ppm) | Description: strata thickness, color, texture, moisture, observations | Remarks |
|--------------|-----------------|-------------------|-------------------|---|---------|
| 0 | | | | | |
| 1 | | | | | |
| 2 | | E | | Lt. olive br vf/f sand, tr/li f/m gravel | |
| 3 | | | | | |
| 4 | VHB-TP100 (4-5) | M | ND | Lt. olive br/dk gr/green vf/f sand, tr/li f/m gravel (green stained), tr wood/debris, MGP-like odor | |
| 5 | | D | | Refusal at 5 feet bsg | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |



Project: Oxide Box Area **Date:** 11/5/08
Test Pit Location: 642 Allens Avenue **Ground Surface Elevation:** Not Surveyed
Equipment Used: Case Backhoe **Contractor:** Clean Harbors Environmental Services
Test Pit Dimension (LxWxD): 6 ft.x3 ft.x8 ft. **Logged By:** CM
Weather: P. Cloudy, ~55°F **Depth to Water:** Not encountered

| DEPTH (feet) | Sample No. | Excavation Effort | OVIM Reading (ppm) | Description: strata thickness, color, texture, moisture, observations | Remarks |
|--------------|------------|-------------------|--------------------|--|---------|
| 0 | | | | | |
| 1 | | | | | |
| 2 | | E | | Lt. olive br v/f sand, tr/li f/m gravel | |
| 3 | | | | | |
| 4 | | E/M | | Dk grayish green v/f sand, masses of blackish blue, extremely dense, vf sand | |
| 5 | | | | | |
| 6 | | M/D | 114 | Blk v/f sand, MGP-like odor, plastic sheeting at approximately 7 feet bsg | |
| 7 | | | | | |
| 8 | | D | | Refusal | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |



Project: Oxide Box Area

Date: 11/5/08

Test Pit Location: 642 Allens Avenue

Ground Surface Elevation: Not Surveyed

Equipment Used: Case Backhoe

Contractor:
Clean Harbors Environmental Services

Test Pit Dimension (LxWxD): 6 ft.x3 ft.x6 ft.

Logged By: CM

Weather: P. Cloudy, ~55°F

Depth to Water: Not encountered

| DEPTH (feet) | Sample No. | Excavation Effort | OVM Reading (ppm) | Description: strata thickness, color, texture, moisture, observations | Remarks |
|--------------|------------|-------------------|-------------------|--|--|
| 0 | | | | | Attempted test pit at top of mound located along southern perimeter fence. Encountering concrete/rubble to 3 feet bsg with refusal at 3 feet. Mound appears to be soil/rubble pile. Will trench to the northeast and dig at foot of mound. PID screening of soil from mound excavation at 2 feet was ND. Encountered fragment of a flanged end of pipe with estimated diameter of ~ 30 inches. |
| 1 | | E | | Lt olive br vf/f sand, tr cobbles | |
| 2 | | | ND | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | E/M | | Blk vf/f sand, tr/li f/c gravel/cobbles, strong MGP-like odor | PID screening of breathing zone indicated TVOCs of 7 ppm. Collected sample at 6 feet bsg and backfilled excavation. |
| 6 | | D | >2500 | Refusal | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |



Project: Oxide Box Area

Date: 11/5/08

Test Pit Location: 642 Allens Avenue

Ground Surface Elevation: Not Surveyed

Equipment Used: Case Backhoe

Contractor:

Clean Harbors Environmental Services

Test Pit Dimension (LxWxD): 12 ft.x6 ft.x6 ft.

Logged By:

CM

Weather: P. Cloudy, ~55°F

Depth to Water:

Not encountered

| DEPTH (feet) | Sample No. | Excavation Effort | OVM Reading (ppm) | Description: strata thickness, color, texture, moisture, observations | Remarks |
|--------------|------------|-------------------|-------------------|--|---|
| 0 | | | | | |
| 1 | | E/M | | Lt olive br vf/f sand, tr/li gravel/ cobbles | South wall of excavation encountered rock/concrete, so moved excavation south (closer to VHB-18). Completed southern excavation to 4 feet bsg. Encountered pieces of metal and timber throughout excavation. Refusal encountered at 4 feet bsg, bottom of excavation had an irregular surface (not smooth). |
| 2 | | | | | |
| 3 | | M/D | 315 | Blk green vf/f sand, tr/li gravel/cobbles | |
| 4 | | D | | | |
| 5 | | | | Yell br/br yell c sand and gravel and cobbles. | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |



Project: Oxide Box Area

Date: 11/5/08

Test Pit Location: 642 Allens Avenue

Ground Surface Elevation: Not Surveyed

Equipment Used: Case Backhoe

Contractor: Clean Harbors Environmental Services

Test Pit Dimension (LxWxD): 10 ft.x6 ft.x9 ft.

Logged By: CM

Weather: P. Cloudy, ~55°F

Depth to Water: Not encountered

| DEPTH (feet) | Sample No. | Excavation Effort | OVM Reading (ppm) | Description: | Remarks |
|--------------|------------|-------------------|-------------------|--|---|
| 0 | | | | strata thickness, color, texture, moisture, observations | |
| 1 | | | | | Test pit advanced in area of depression. Excavated large piece of pressed iron shavings (~4.5 feet x 3 feet) that was embedded with gravel on one side. Approximately 30 inch metal pipe encountered on northwest corner of excavation that appears to run in a north/south orientation. Pipe was observed to be filled with sand. Pockets of very dense wood chip aggregates were encountered. |
| 2 | | E | | Yell/bluish/lt olive br/gray vf/f sand, li/so gravel/cobbles | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | M | | Yell/bluish/lt olive br/gray vf/f sand and cobbles, dense | |
| 6 | | | | | |
| 7 | | M/D | | Yell/Yell br/br yell vf/f sand and cobbles, very dense | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-321
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Ditch Witch
Rig Model: N/A
Drilling Method:
Soil Vactor

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.9
Final Boring Depth (ft.): 4
Date Start - Finish: 5/20/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D. (in): N/A

Sampler Type: N/A
Sampler O.D. (in.): N/A
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown gray (10YR, 6/2) fine SAND, some Silt, trace Gravel, dry | 1 2 | ND | | | | | | No Equipment Installed |
| 2 | | | | | | | | | | | | | | |
| 3 | S-2 | 2-4 | N/A | N/A | | S-2 : Brown (10YR, 4/4) fine to Medium SAND, trace Gravel, trace Silt, moist | 3 | ND | | | | FILL | | |
| 4 | | | | | | | | | | | 4 | 6.9 | | |
| 5 | | | | | | End of exploration at 4 feet. | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |

REMARKS
1 - This boring was completed with an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-321

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-322
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Ditch Witch
Rig Model: N/A
Drilling Method:
 Soil Vactor

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.9
Final Boring Depth (ft.): 3.5
Date Start - Finish: 5/20/2014 - 5/20/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D. (in): N/A

Sampler Type: N/A
Sampler O.D. (in.): N/A
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Groundwater Depth (ft.) | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------------------|-------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Elev. (ft.) | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10YR, 4/3) fine SAND, some Silt, little Gravel, dry | 1 2 | 0.8 | | | | | No Equipment Installed |
| 2 | | | | | | | | | | | FILL | | |
| 3 | S-2 | 2-3.5 | N/A | N/A | | S-2 : Dark green gray (GLEY 1. 4/1) fine SAND and SILT, trace Gravel | 3 | 0.6 | | | | | |
| 4 | | | | | | End of exploration at 3.5 feet. | | | | | 3.5 | 7.4 | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - This boring was completed with an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 3.5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-322

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-323
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Ditch Witch
Rig Model: N/A
Drilling Method:
Soil Vactor

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.9
Final Boring Depth (ft.): 5
Date Start - Finish: 5/20/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D. (in): N/A

Sampler Type: N/A
Sampler O.D. (in.): N/A
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|---------------------|-------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10R, 4/3) fine SAND, some Silt, trace Gravel, moist | 1 2 | ND | | | | | No Equipment Installed |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Brown (10YR, 4/3) fine SAND, some Silt, some Gravel, moist | ND | | | FILL | | | |
| 3 | S-3 | 4-5 | N/A | N/A | | S-3 : Brown (10YR, 4/3) fine to medium SAND, some Gravel, little Silt, moist | ND | | | | 5 | 6.9 | |
| 4 | | | | | | End of exploration at 5 feet. | 3 | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - This boring was completed with an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-323**

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-324
SHEET: 1 of 1
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Ditch Witch
Rig Model: N/A
Drilling Method:
Soil Vactor

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.2
Final Boring Depth (ft.): 5
Date Start - Finish: 5/20/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D. (in): N/A

Sampler Type: N/A
Sampler O.D. (in.): N/A
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-----------------------------------|------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Yellow brown (10YR, 6/4) fine to medium SAND, some Gravel, trace Silt, dry | 1 2 | 3.4 | | | FILL | | No Equipment Installed |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Blue/black (GLE Y 2, 2.5/B) fine SAND, little wood chips, purifier waste-like odor | 33.5 | | Mod | | | | |
| 3 | S-3 | 4-5 | N/A | N/A | | S-3 : Blue/black (GLE Y 2, 2.5/B) fine SAND, little wood chips, purifier waste-like odor | 26.4 | | Mod | | | | |
| 4 | | | | | | | 3 | | | | 5 | 6.2 | |
| 5 | | | | | | End of exploration at 5 feet. | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - This boring was completed with an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - Water table observed at 5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-324

TABLE U-1 - SURFACE SOIL DATA

OXIDE BOX AREA DATA GAP

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | C19 0-2 FT 12/13/99 | C20 0-2 FT 12/14/99 | C21 0-2 FT 12/14/99 | E03 0-2 FT 12/13/99 | E04 0-2 FT 12/13/99 | E08 0-2 FT 12/14/99 | E09 0-2 FT 12/14/99 | E10 0-2 FT 12/14/99 | E11 0-2 FT 12/14/99 | E12 0-2 FT 12/14/99 | E13 0-2 FT 12/14/99 | E14 0-2 FT 12/15/99 | E15 0-2 FT 12/15/99 | E16 0-2 FT 12/15/99 | E17 0-2 FT 12/15/99 | E18 0-2 FT 12/15/99 | E19 0-2 FT 12/15/99 | B-8 1-2 FT 2003 |
|---|--------------------------------|---------------|-----------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------|
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | 0.38 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4 | ND | ND | ND | ND | 182 |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | 0.22 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.8 | ND | ND | ND | ND | 55.1 |
| Acetone | NE | 10,000 | 10,000 | mg/kg | ND | 0.042 | ND | 0.083 | ND | 0.11 | 0.061 | 0.085 | 0.034 | ND | ND | 0.032 | ND | ND | ND | ND | ND | ND |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | 0.063 | 0.11 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 27.2 |
| Carbon Disulfide | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5 |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | ND | 0.083 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1 | ND | ND | ND | ND | 19.7 |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | ND | ND | ND | 0.28 | ND | 0.085 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | ND | 15 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 68 | ND | ND | ND | ND | 9650 |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | 0.041 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.58 |
| Styrene | 64 | 1,900 | 10,000 | mg/kg | ND | 0.16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.78 |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | 0.048 | 0.41 | 0.034 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 194 |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | ND | 0.67 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5.9 | ND | ND | ND | ND | 336 |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | 310 | 1900 | 550 | ND | ND | 640 | 3000 | ND | 540 | ND | 240 | ND | 1200 | ND | ND | ND | 190 | 40000 |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | |
| Ammonia | NE | NE | NE | mg/kg | 480 | 120 | ND | ND | 100 | 450 | 170 | 560 | 34 | 80 | 490 | 370 | 220 | ND | NA | NA | NA | NA |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | 25.9 | 27.7 | 27 | 15.9 | 17.4 | 1 | 28.1 | 0.8 | 2.3 | 4.4 | 9.1 | 10.6 | 44 | 7.2 | 2.8 | 1.4 | 35.6 | 61.2 |
| Antimony | NE | 820 | 10,000 | mg/kg | ND | 0.29 | 0.65 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.42 | 0.38 | ND | ND | 0.28 | NA |
| Arsenic | NE | 7 | 10,000 | mg/kg | 10 | 8.3 | 3 | 5.8 | 4.2 | 15.1 | 4.2 | 8.3 | 7.3 | 10.9 | 6.9 | 6.6 | 7.6 | 8.9 | 7.7 | 7.2 | 15.4 | 47.3 |
| Barium | NE | 10,000 | 10,000 | mg/kg | 31.7 | 25.3 | 19 | 19 | 20.1 | 21.8 | 13.9 | 24.9 | 20 | 30.6 | 26.1 | 16.6 | 19.5 | 30.1 | 27 | 15.9 | 38.7 | NA |
| Beryllium | NE | 1.5 | 10,000 | mg/kg | ND | ND | ND | 0.45 | ND | ND | ND | 0.52 | 0.27 | 0.3 | ND | ND | 0.28 | 0.43 | 0.38 | 0.24 | 0.24 | NA |
| Cadmium | NE | 1,000 | 10,000 | mg/kg | 2.3 | 1.8 | 0.47 | 1.6 | 1.2 | 2 | 0.36 | 1.9 | 1.7 | 2.5 | 1.3 | 2.7 | 1.6 | 2 | 1.8 | 1.8 | 3.3 | NA |
| Chromium | NE | 10,000 | 10,000 | mg/kg | 12.6 | 5.1 | 2.1 | 13.7 | 8.2 | 4.6 | 2.5 | 13.9 | 10.9 | 13.8 | 3.8 | 7.7 | 8.9 | 12.3 | 12 | 11.9 | 13.9 | NA |
| Copper | NE | 10,000 | 10,000 | mg/kg | 31.3 | 17.1 | 13.7 | 12.6 | 14.1 | 4.2 | 9.5 | 18.3 | 11 | 25.7 | 11.5 | 14.2 | 18.8 | 19.3 | 16.5 | 26.8 | 78.9 | NA |
| Iron | NE | NE | NE | mg/kg | 27300 | 20500 | 5620 | 19000 | 14800 | 21900 | 4050 | 19600 | 18600 | 26500 | 15000 | 32200 | 17500 | 21200 | 18500 | 19800 | 78900 | NA |
| Lead | NE | 500 | 10,000 | mg/kg | 343 | 151 | 45.2 | 5.8 | 86 | 5.4 | 28.5 | 17.5 | 6 | 515 | 107 | 64.2 | 36.2 | 72.6 | 99.4 | 23.9 | 491 | 91.9 |
| Mercury | NE | 610 | 10,000 | mg/kg | 0.15 | 0.44 | 1.2 | ND | 0.036 | ND | 0.037 | ND | ND | ND | 0.064 | 0.092 | 0.87 | 0.088 | ND | 0.018 | 0.41 | NA |
| Nickel | NE | 10,000 | 10,000 | mg/kg | 4.4 | ND | 0.49 | 9 | 5.1 | 1.2 | 1.4 | 13.6 | 8.1 | 9.4 | 0.77 | 1.8 | 2.8 | 7.9 | 11 | 10.3 | 7.5 | NA |
| Silver | NE | 10,000 | 10,000 | mg/kg | 5.2 | 4.1 | 1.1 | 3 | 2.7 | 4 | 0.82 | 3.1 | 3.5 | 5.2 | 3.1 | 5.6 | 3.4 | 4 | 3 | 3.5 | 6.7 | NA |
| Zinc | NE | 10,000 | 10,000 | mg/kg | 27.1 | 7 | 2.5 | 30.1 | 18.2 | 9.5 | 1.2 | 43.8 | 24.1 | 33 | 7 | 14.3 | 21.3 | 27.4 | 45 | 38.3 | 34.6 | NA |

Notes:

ND - Not Detected NE - Not Established R - sample rejected by the lab
NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM Upper Concentration Limits

- This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
- While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

TABLE U-1 - SURFACE SOIL DATA

OXIDE BOX AREA DATA GAP

642 Allens Avenue

Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | C19 | C20 | C21 | E03 | E04 | E08 | E09 | E10 | E11 | E12 | E13 | E14 | E15 | E16 | E17 | E18 | E19 | B-8 |
|--|--------------------------------|---------------|-----------|-------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | | | | 0-2 FT 12/13/99 | 0-2 FT 12/14/99 | 0-2 FT 12/14/99 | 0-2 FT 12/13/99 | 0-2 FT 12/13/99 | 0-2 FT 12/14/99 | 0-2 FT 12/14/99 | 0-2 FT 12/14/99 | 0-2 FT 12/14/99 | 0-2 FT 12/14/99 | 0-2 FT 12/14/99 | 0-2 FT 12/14/99 | 0-2 FT 12/14/99 | 0-2 FT 12/15/99 | 0-2 FT 12/15/99 | 0-2 FT 12/15/99 | 0-2 FT 12/15/99 | 0-2 FT 12/15/99 |
| Polychlorinated Biphenyls (PCBs) and Pesticides | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor 1248 | 10 | 10 | 10,000 | mg/kg | 0.046 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA |
| 4,4-DDD | NE | NE | 10,000 | mg/kg | 0.036 | 0.12 | 0.022 | ND | 0.007 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA |
| 4,4-DDT | NE | NE | 10,000 | mg/kg | 0.011 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.005 | ND | ND | ND | ND | ND | ND | NA |
| Aldrin | NE | NE | 10,000 | mg/kg | ND | 0.0025 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA |
| alpha-BHC | NE | NE | 10,000 | mg/kg | 0.0052 | 0.018 | ND | ND | ND | ND | ND | ND | ND | ND | 0.0021 | ND | ND | ND | ND | ND | ND | NA |
| beta-BHC | NE | NE | 10,000 | mg/kg | ND | ND | 0.0026 | ND | ND | ND | ND | ND | ND | ND | 0.0034 | ND | ND | ND | ND | ND | ND | NA |
| delta-BHC | NE | NE | 10,000 | mg/kg | ND | ND | 0.0087 | ND | ND | ND | ND | ND | ND | ND | 0.0026 | 0.0084 | ND | ND | ND | 0.0036 | ND | NA |
| Dieldrin | NE | 0.4 | 10,000 | mg/kg | 0.012 | 0.14 | 0.01 | ND | ND | ND | 0.0039 | ND | ND | ND | 0.016 | ND | 0.025 | ND | ND | ND | ND | NA |
| Endosulfan I | NE | NE | 10,000 | mg/kg | 0.002 | ND | ND | ND | ND | ND | 0.0019 | ND | ND | ND | 0.0042 | 0.0023 | ND | ND | ND | ND | ND | NA |
| Endosulfan II | NE | NE | 10,000 | mg/kg | ND | ND | 0.013 | ND | ND | ND | ND | ND | ND | ND | 0.011 | ND | 0.0079 | ND | ND | ND | 0.0037 | NA |
| Endosulfan sulfate | NE | NE | 10,000 | mg/kg | 0.016 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA |
| Endrin | NE | NE | 10,000 | mg/kg | 0.0058 | 0.056 | 0.011 | ND | ND | ND | 0.0086 | ND | ND | ND | 0.0069 | ND | 0.015 | ND | ND | ND | ND | NA |
| Endrin ketone | NE | NE | 10,000 | mg/kg | 0.016 | 0.041 | ND | ND | ND | ND | 0.0073 | ND | ND | ND | 0.015 | ND | 0.0042 | ND | ND | ND | ND | NA |
| gamma-BHC | NE | NE | 10,000 | mg/kg | ND | 0.011 | ND | ND | ND | ND | ND | ND | ND | ND | 0.0022 | ND | 0.014 | ND | ND | ND | ND | NA |
| gamma-Chlordane | NE | NE | 10,000 | mg/kg | 0.002 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA |
| Heptachlorepoxide | NE | NE | 10,000 | mg/kg | ND | 0.0024 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0038 | ND | ND | ND | ND | NA |
| Methoxychlor | NE | NE | 10,000 | mg/kg | 0.053 | 0.072 | ND | ND | ND | ND | ND | ND | ND | ND | 0.076 | ND | ND | ND | ND | ND | ND | NA |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | ND | 1.6 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.6 | ND | ND | ND | ND | ND |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 35 |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | 0.46 | 1.1 | 0.55 | ND | ND | ND | ND | ND | ND | ND | 0.95 | ND | 0.75 | ND | ND | ND | ND | 61 |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | ND | 0.71 | ND | ND | ND | ND | ND | ND | ND | ND | 0.61 | ND | ND | ND | ND | ND | ND | ND |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | 1.4 J | 1.7 J | ND | ND | 0.52 | ND | ND | ND | ND | ND | 2.3 | ND | 1.1 | ND | ND | ND | 0.92 | ND |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | 1.1 | 0.68 J | 1.6 | ND | ND | ND | ND | ND | ND | ND | 1.4 | ND | ND | ND | ND | ND | 0.79 | ND |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | 3.4 | 3.6 | 2.4 | ND | ND | ND | 0.44 | ND | ND | ND | 5 | ND | 2.6 | ND | ND | ND | 1.8 | ND |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | 0.71 | 0.94 | 0.48 | ND | ND | ND | ND | ND | ND | ND | 1.4 | ND | ND | ND | ND | ND | 0.42 | ND |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | 1.5 | 1.6 | 1.1 | ND | ND | ND | ND | ND | ND | ND | 2.4 | ND | 1.4 | ND | ND | ND | 0.96 | ND |
| Chrysene | NE | 780 | 10,000 | mg/kg | 1.8 | 2.5 | 1.1 | ND | 0.9 | ND | 0.41 | ND | ND | ND | 3.2 | 0.67 | 1.8 | 0.41 | ND | ND | 1.4 | ND |
| Dibenzo(a,h)Anthracene | NE | 0.8 | 10,000 | mg/kg | ND | 0.46 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Fluoranthene | NE | 10,000 | 10,000 | mg/kg | 1.9 | 2.5 | 0.46 | ND | 1 | ND | ND | ND | ND | ND | 3.3 | ND | 1.6 | 0.7 | ND | ND | 2 | 76 |
| Fluorene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 96 |
| Indeno(1,2,3-cd)Pyrene | NE | 7.8 | 10,000 | mg/kg | 1 | 1.2 | 0.79 | ND | ND | ND | ND | ND | ND | ND | 1.5 | ND | 1 | ND | ND | ND | 0.46 | ND |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | ND | 2.5 | ND | ND | ND | ND | ND | ND | ND | ND | 0.67 | ND | 6.6 | ND | ND | ND | ND | 15400 |
| Phenanthrene | NE | 10,000 | 10,000 | mg/kg | 0.73 | 2.4 | ND | ND | 0.42 | ND | ND | ND | ND | ND | 1.8 | ND | 1 | 0.41 | ND | ND | 0.83 | 199 |
| Pyrene | NE | 10,000 | 10,000 | mg/kg | 1.7 | 2.3 | 0.37 | ND | 0.65 | ND | ND | ND | ND | ND | 2.6 | ND | 1.4 | 0.45 | ND | ND | 1.6 | 66 |

Notes:

ND - Not Detected NE - Not Established R - sample
 NA - Not Analyzed N/A - Not Applicable rejected by the lab

Bold Concentrations and shaded cells indicate an exceedance of RIDEM I/C-DEC

Underlined concentrations indicate an exceedance of RIDEM GB Leachability Criteria

Red text indicates an exceedance of RIDEM Upper Concentration Limits

- This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
- While the RIDEM Direct Exposure Criteria and GB Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in the tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria.

TABLE U-2 - SUBSURFACE SOIL DATA

OXIDE BOX AREA DATA GAP

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Leachability Criteria | RIDEM I/C DEC | RIDEM UCL | Units | RCA-11 | | C19 4-6 FT | C20 4-6 FT | C21 6-8 FT | E03 2-4 FT | E04 6-8 FT | E08 2-4 FT | E09 2-4 FT | E10 2-4 FT | E11 2-4 FT | E12 2-4 FT | E13 2-4 FT | E14 2-4 FT | E15 4-6 FT | E16 2-4 FT | E17 2-4 FT | E18 2-4 FT | E19 2-4 FT | B-1A 3-4 FT | B-1C 11-12 FT | B-2C 5.5-6.5 FT | VHB TP-100 4-5 FT | VHB TP-101 5-8 FT | VHB TP-102 6 FT | GZ-321 2-4 FT | GZ-322S-2 2-4 FT | GZ-323S-2 2-4 FT | GZ-324 S-2 2-4 FT | | | |
|--|--------------------------------|---------------|-----------|-------|--------|----------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|------------------|--------------------|----------------------|----------------------|--------------------|------------------|---------------------|---------------------|----------------------|--------|-------|-------|
| | | | | | 4-6 FT | 14-16 FT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 1994 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 21 | ND | ND | ND | ND | 172 | ND | 67.3 | 0.0157 | 0.961 | 74.2 | ND | 0.0354 | ND | 7.39 | | | |
| 1,3,5-Trimethylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 9.7 | ND | ND | ND | ND | 79.4 | ND | 31.2 | ND | 0.421 | 32.4 | ND | 0.0205 | ND | 3.19 | | | |
| 4-Isopropyltoluene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2 | ND | 0.9 | ND | 0.263 | 0.724 | ND | ND | ND | ND | | | |
| Acetone | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | 0.11 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.483 | ND | ND | ND | ND | | | |
| Benzene | 4.3 | 200 | 10,000 | mg/kg | ND | ND | ND | 0.026 | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 43 | ND | ND | ND | ND | 173 | ND | 40 | 0.0186 | 1.79 | 23 | ND | 0.0228 | ND | 0.146 | | |
| Carbon Disulfide | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.6 | ND | 1.1 | ND | ND | 0.388 | ND | ND | ND | ND | | | |
| Chloroform | NE | 940 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0119 | 0.0205 | 0.013 | ND | | | |
| Ethylbenzene | 62 | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 18 | ND | ND | ND | ND | 159 | ND | 47.5 | ND | 1.59 | 59.5 | ND | 0.0217 | ND | 4 D | | |
| Isopropylbenzene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.5 | ND | 1.4 | ND | 0.099 | 1.54 | ND | ND | ND | 0.213 | | | |
| Methylene Chloride | NE | 760 | 10,000 | mg/kg | ND | ND | ND | ND | NA | 0.35 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.126 | 0.182 | 0.316 | ND | ND | ND | ND | | |
| Naphthalene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 630 | ND | ND | ND | ND | 1320 | ND | 717 | 0.294 | 86.6 | 759 | 0.0435 | 0.48 | ND | 56.2 D | | |
| n-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.269 | | |
| n-Propylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 16.7 | ND | 6.2 | ND | 0.144 | 5.62 | ND | ND | ND | 0.752 | | |
| sec-Butylbenzene | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.2 | ND | 0.5 | ND | 0.0326 | 0.774 | ND | ND | ND | ND | | | |
| Styrene | 64 | 1,900 | 10,000 | mg/kg | ND | ND | ND | 0.037 | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0714 | 35.9 | ND | 0.0354 | ND | ND | | |
| Toluene | 54 | 10,000 | 10,000 | mg/kg | ND | ND | ND | 0.098 | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 43 | ND | ND | ND | ND | 321 | ND | 52.5 | 0.0735 | 0.117 | 222 | ND | 0.106 | ND | 0.146 | | |
| Xylenes (Total) | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | 0.07 | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 23 | ND | ND | ND | ND | 1100 | ND | 320 | ND | 0.302 | 438 | ND | 0.129 | ND | 17.9 | | |
| Total Petroleum Hydrocarbons (TPH) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydrocarbon Content | 2,500 | 2,500 | 30,000 | mg/kg | NA | ND | 220 | 140 | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 9700 | ND | ND | ND | ND | 8670 | ND | 1874 | 867 | 577 | 2000 | ND | 1090 | ND | 4930 | | |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ammonia | NE | NE | NE | mg/kg | NA | NA | 380 | 20 | ND | ND | 44 | 300 | ND | 560 | ND | 150 | 40 | 70 | 850 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Total Cyanide | NE | 10,000 | 10,000 | mg/kg | NA | NA | 135 | 2.8 | ND | 3.3 | 10 | 2.5 | 4.5 | 1 | 0.31 | 0.31 | 0.14 | 1.1 | 197 | 5.1 | 0.2 | 0.57 | 0.066 | NA | NA | NA | NA | NA | NA | 75.5 | NA | NA | NA | NA | | |
| Arsenic | NE | 7 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | |
| Barium | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 28.7 | 17.2 | 26.3 | 18.6 | 32.5 | |
| Chromium | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 21.7 | 5.7 | 4 | 13.6 | 7.2 | |
| Iron | NE | NE | NE | mg/kg | NA | NA | 29700 | 60700 | NA | 19800 | 17000 | 20900 | 6890 | 14600 | 17300 | 23600 | 21700 | 22700 | 90900 | 18800 | 16400 | 14000 | 16800 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| Lead | NE | 500 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 132 | 42.7 | 86.6 | 8.6 | 87.2 | |
| Mercury | NE | 610 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1.18 | ND | 0.316 | ND | 0.98 | |
| Silver | NE | 10,000 | 10,000 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ND | 0.55 | 0.81 | 0.62 | 0.5 | |
| Reactive Sulfide | NE | NE | NE | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3.2 | ND | ND | ND | ND | |
| Leachable Metals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TCLP Lead | NE | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.029 | ND | ND | ND | 0.154 |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1-Biphenyl | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | 2.23 | ND | ND | ND | 0.565 | |
| 2-Methylnaphthalene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 220 | ND | ND | ND | ND | ND | ND | ND | ND | 0.436 | 27.1 | ND | 0.516 | ND | 8.33 D | | |
| Acenaphthene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 34 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.447 | |
| Acenaphthylene | NE | 10,000 | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 50 | ND | ND | ND | ND | ND | ND | ND | ND | 0.479 | 2.73 | ND | 1.1 | ND | 2.63 | | |
| Anthracene | NE | 10,000 | 10,000 | mg/kg | ND | ND | 0.39 | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 100 | ND | ND | ND | ND | ND | ND | ND | ND | 0.416 | 3.24 | ND | ND | ND | 0.965 | | |
| Benzo(a)anthracene | NE | 7.8 | 10,000 | mg/kg | ND | ND | 1.2 | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 110 | ND | ND | ND | ND | ND | ND | ND | ND | 0.674 | 3 | ND | 0.558 | ND | 1.94 | | | |
| Benzo(a)pyrene | NE | 0.8 | 10,000 | mg/kg | ND | ND | 0.76 | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 70 | ND | ND | ND | ND | ND | ND | ND | ND | 1.13 | 0.454 | 1.92 | ND | 0.261 | ND | 1 | | |
| Benzo(b)fluoranthene | NE | 7.8 | 10,000 | mg/kg | ND | ND | 2.1 | 0.74 | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 100 | ND | ND | ND | ND | ND | ND | ND | ND | 2.91 | 0.638 | 2.54 | ND | 1.63 | ND | 3.35 | | |
| Benzo(g,h,i)perylene | NE | 10,000 | 10,000 | mg/kg | ND | ND | 0.49 | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 26 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.425 | | |
| Benzo(k)fluoranthene | NE | 78 | 10,000 | mg/kg | ND | ND | 0.9 | 0.44 | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 27 | ND | ND | ND | ND | ND | ND | ND | ND | 1.92 | ND | ND | ND | 0.638 | ND | 1.02 | | |
| Carbazole | NE | NE | 10,000 | mg/kg | ND | ND | ND | ND | NA | ND | ND | ND | ND | ND | ND | ND | ND | ND | 82 | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | ND | ND | ND | 0.518 | |
| Chrysene | NE | 780 | 10,000 | mg/kg | ND | ND | 1.7 | 0.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

TABLE U-3 - GROUNDWATER AND NAPL GAUGING

OXIDE BOX AREA DATA GAP

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2011 | | | | | | | August 2011 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | - | 6.72 | - | 14.95 | 6.32 | NP | NP | 6.32 | - | 6.92 | - | 14.95 | 6.12 | NP | NP | 6.12 |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | - | 8.93 | - | 16.92 | 6.42 | NP | NP | 6.42 | - | 9.16 | - | 16.92 | 6.19 | NP | NP | 6.19 |

Notes

Well is located in the Natural Gas Regulator portion of the Property

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Elevations are relative to City of Providence Datum

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

TABLE U-3 - GROUNDWATER AND NAPL GAUGING

OXIDE BOX AREA DATA GAP

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | February 2012 | | | | | | | July 2012 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | - | 6.91 | - | 15.05 | 6.13 | NP | NP | 6.13 | - | 6.95 | - | 14.95 | 6.09 | NP | NP | 6.09 |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | - | 9.15 | - | 17.03 | 6.20 | NP | NP | 6.20 | - | 9.21 | - | 17 | 6.14 | NP | NP | 6.14 |

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TABLE U-3 - GROUNDWATER AND NAPL GAUGING

OXIDE BOX AREA DATA GAP

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | February 2013 | | | | | | | November 2013 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | - | 6.95 | - | 15 | 6.09 | NP | NP | 6.09 | - | 7.41 | - | 14.72 | 5.63 | NP | NP | 5.63 |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | - | 9.23 | - | 17 | 6.12 | NP | NP | 6.12 | - | 9.62 | - | 16.74 | 5.73 | NP | NP | 5.73 |

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TABLE U-3 - GROUNDWATER AND NAPL GAUGING

OXIDE BOX AREA DATA GAP

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2014 | | | | | | | October 2014 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | - | 6.44 | - | 15 | 6.60 | NP | NP | 6.60 | - | 7.24 | - | 14.98 | 5.80 | NP | NP | 5.80 |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | - | 8.91 | - | 17 | 6.44 | NP | NP | 6.44 | - | 9.34 | - | 17 | 6.01 | NP | NP | 6.01 |

Notes

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TABLE U-3 - GROUNDWATER AND NAPL GAUGING

OXIDE BOX AREA DATA GAP

642 Allens Avenue

Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | April 2015 | | | | | | | October 2015 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | - | 6.3 | - | 15.02 | 6.74 | NP | NP | 6.74 | - | 7.27 | - | 15.12 | 5.77 | NP | NP | 5.77 |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | - | 8.51 | - | 17 | 6.84 | NP | NP | 6.84 | - | 9.58 | - | 17.18 | 5.77 | NP | NP | 5.77 |

Notes

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Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

TABLE U-3 - GROUNDWATER AND NAPL GAUGING

OXIDE BOX AREA DATA GAP

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | May 2016 | | | | | | | October 2016 | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) |
| NG | RCA-11 | 13.27 | 13.04 | 10.57 | Standpipe | Shallow | 9/12/1994 | 12.53 | 4 - 14 | NP | NP | - | 6.92 | - | 14.95 | 6.12 | NP | NP | 6.12 | Decommissioned June 2016 | | | | |
| NG | VHB-18 | 15.54 | 15.35 | 10.61 | Standpipe | Shallow | 1/21/2003 | 12.26 | 6 - 16 | NP | NP | - | 9.19 | - | 17 | 6.16 | NP | NP | 6.16 | Decommissioned June 2016 | | | | |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
 - Well is located at the LNG Facility
 - Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to City of Providence Datum
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

TABLE U-4 - GROUNDWATER ANALYTICAL DATA

OXIDE BOX AREA DATA GAP

642 Allens Avenue

Providence, Rhode Island

| | RIDEM | | Sample ID: Sample Date: | RCA-11 | | | | | | | | | | VHB-18 | | | | | VHB-19 | | | | |
|--|-------|--------|----------------------------|--------|-------|--------|--------|------|------|--------|--------|------|--------|--------|-------------|--------------|-------------|--------------|--------|------|------|-------|----|
| | GB GW | GB UCL | | 1994 | 1996 | 2001 | 2003 | 2005 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2002 | 2003 | 2005 | 2008 | 2009 | 2010 | 2002 | 2003 | |
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0015 | ND | ND | 0.0001 | ND | ND | ND | 0.0004 | 0.107 | 0.0235 | 0.004 | 0.0011 | ND | ND | ND | ND | |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0464 | ND | ND | ND | ND | ND | ND | ND | |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00153 | ND | ND | ND | ND | ND | ND | |
| Benzene | 0.14 | 18 | mg/L | ND | ND | 0.032 | 0.0167 | ND | ND | 0.0092 | 0.0999 | ND | ND | 0.001 | 1.97 | 0.206 | 1.95 | 0.742 | ND | ND | ND | ND | |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.003 | ND | ND | ND | ND | ND | ND | ND | |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | ND | 0.0005 | 0.0012 | ND | ND | 0.0001 | 0.168 | 0.0399 | 0.139 | 0.0214 | ND | ND | ND | ND | |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00173 | 0.0037 | ND | ND | ND | ND | ND | |
| Naphthalene | 2.67 | NE | mg/L | ND | 0.011 | 0.505 | 0.163 | ND | ND | 0.0032 | 0.0145 | ND | 0.0051 | 0.0093 | 0.76 | 0.229 | 0.0208 | 0.0062 | 0.016 | ND | ND | ND | |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0104 | 0.00198 | 0.0018 | ND | ND | ND | ND | ND | |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| Styrene | 2.2 | 50 | mg/L | ND | ND | 0.0195 | ND | ND | ND | 0.0003 | ND | ND | 0.0003 | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | |
| Toluene | 1.7 | 21 | mg/L | ND | ND | 0.0205 | 0.0065 | ND | ND | 0.0004 | ND | ND | 0.001 | 0.0003 | 0.0318 | 0.00315 | 0.243 | 0.0018 | ND | ND | ND | ND | |
| Xylene O | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | 0.0002 | ND | ND | 0.0002 | 0.0002 | ND | ND | ND | 0.0026 | ND | ND | ND | ND | |
| Xylene P,M | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | 0.0003 | ND | ND | 0.0004 | 0.0003 | ND | ND | ND | 0.0097 | ND | ND | ND | ND | |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | 0.024 | ND | ND | ND | 0.0005 | ND | ND | 0.0006 | 0.0005 | 0.36 | ND | ND | 0.0123 | ND | ND | ND | ND | |
| Total VOCs | NE | NE | mg/L | ND | 0.011 | 0.577 | 0.1877 | ND | ND | 0.0142 | 0.1156 | ND | 0.007 | 0.0116 | 3.0966 | 0.50679 | 2.3623 | 0.7848 | 0.016 | ND | ND | ND | |
| Inorganics | | | | | | | | | | | | | | | | | | | | | | | |
| Total Cyanide | NE | NE | mg/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10.6 | NA | NA | NA | NA | NA | 0.909 | NA |

Notes:

ND - Not Detected

NE - Not Established

NA - Not Analyzed

N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
2. The detected concentrations were compared to RIDEM Method 1 Criteria.



APPENDIX V

DATA GAP – RCA-3 DNAPL

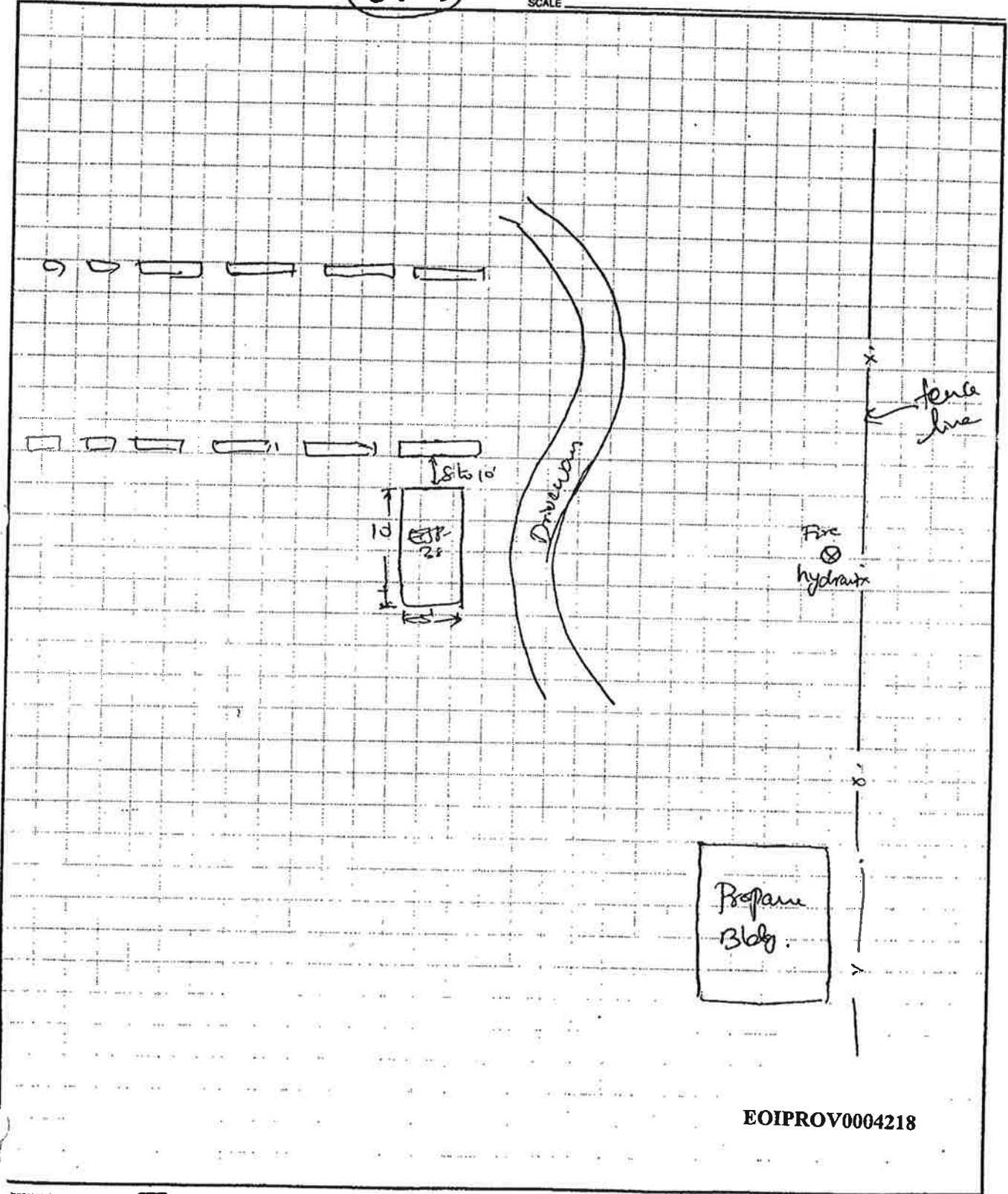
| RESOURCE CONTROLS | | | | | TEST BORING LOG | | | | | | |
|--|--------------------------------|--|----------------|--------------------|---|---|---|-------------------------------------|--|--|--|
| PROJECT: Providence Gas Company PROJECT NO.: A2000 LOCATION: 642 Allens Avenue, Providence, R.I. DRILLING CO.: American Drilling, Inc. DRILLED BY: Jim Campbell INSPECTED BY: Daniel Lanier | | | | | BORING NO. RCA-3 PAGE 1 OF 1 DATE STARTED: 9/8/94 DATE FINISHED: 9/9/94 SURFACE ELEVATION: | | | | | | |
| GROUNDWATER OBSERVATIONS | | | | | | | | | | | |
| | | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">DEPTH</th> <th>STABILIZATION TIME</th> </tr> <tr> <td></td> <td style="text-align: center;">N/A</td> </tr> </table> | | | DEPTH | STABILIZATION TIME | | N/A | | | |
| DEPTH | STABILIZATION TIME | | | | | | | | | | |
| | N/A | | | | | | | | | | |
| | | | | | CASING SAMPLER TYPE: Split Spoon SIZE I.D.: 1-3/8" HAMMER WT.: 140 lbs. HAMMER FALL: 30 in. | | | | | | |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) SAND | FIELD TEST DATA PID - 10.2 eV (ppm) | | | |
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | | | | |
| 5' | 0-2 | SS-1 | 80% | 4-5-9-11 | | 5 | dry, black, sandy FILL, trace coal | 28.5 | | | |
| | 2-4 | SS-2 | 25% | 8-5-5-8 | | | damp, brown, fine SAND, some med. sand | 8.4 | | | |
| 10' | 4-6 | SS-3 | 75% | 5-6-5-3 | | moist, gray med. to fine SAND, trace coarse sand | 166 | | | | |
| | 6-8 | SS-4 | 60% | 3-2-2-2 | | saturated, olive brown, med. to fine SAND, petroleum odor | 257 | | | | |
| | 8-10 | SS-5 | 100% | 1-11/2' | | SAME, with little silt, oily | 523 | | | | |
| 15' | 10-12 | SS-6 | 30% | 1-3-4-8 | | cohesive, black, fine grained matrix, tarry odor | 217 | | | | |
| | 12-14 | SS-7 | 90% | 4-8-11-11 | | saturated, dark olive, med. to fine SAND, little silt | 427 | | | | |
| | 14-16 | SS-8 | 50% | 4-4-5-6 | | oily, coars to med. SAND, some fine sand & silt | 407 | | | | |
| 20' | 16-18 | SS-9 | 70% | 5-5-3-3 | | olive, medium SAND, little fine sand & silt | 407 | | | | |
| | 18-20 | SS-10 | 75% | 2-1-2-2 | | SAME | 68 | | | | |
| | 20-22 | SS-11 | 85% | 2-5-6-4 | | olive, SILT, trace medium to fine sand | | | | | |
| 25' | 22-24 | SS-12 | 90% | 2-3-9-8 | | 21 | dark gray, coarse to medium SAND, little silt | | | | |
| | 24-26 | SS-13 | 100% | 2-8-10-13 | 25 | dark gray, medium to fine SAND & SILT | 59.9 | | | | |
| | 26-28 | SS-14 | 70% | 9-14-10-12 | 25 | dark olive, coarse to medium SAND & SILT trace gravel | 92 | | | | |
| 30' | | | | | | SAME | 43 | | | | |
| | | | | | | Bottom of exploration at 28' | | | | | |
| GENERAL REMARKS: 10' 0.020"-slot EFG screen 8-1/2" borehole HSA / boring #2 silica sand pack 2'-10" standpipe | | | | | 28' to 16' Grout | | | | | | |

EOIPROV0003858

RESOURCE CONTROLS
 Environmental Assm., Engineering & Remediation
 474 Broadway
 PAWTUCKET, RHODE ISLAND 02860
 (401) 728-6860

ETP-28

JOB _____
 SHEET NO. _____ OF _____
 CALCULATED BY _____ DATE _____
 CHECKED BY _____ DATE _____
 SCALE _____



EOIPROV0004218

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B06

Date: 1/27/00

Within 100' of Water: No

Instrument: Thermo Environment
Instruments, Inc., Model 580B OV

Boring Depth: 6.0'

Depth to Water: 4.0'

Logged By: Jason Wiggin

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1015 | 2.5 | (0-20") F/M brown sand with TR gravel and silt. (20-24") black cinders/ash. |
| B | 2-4 | 47/48 | 1040 | 2.4 | (25-48") F/C black cinder/ash with LI porous cinders. (46-48") organic, fibrous material; dry. (48-72") F/C gray sand; LI silt; wet. |
| C | 4-6 | | | 14.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B07

Date: 1/27/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 5.3'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1100 | 0.0 | (0-3") F/M brown sand with SO gravel; dry; no odor. (3-10") F/loose black cinder ash and M/large black cinders; dry; no odor. (10-24") F/C brown sand with LI gravel. |
| B | 2-4 | 45/48 | | 0.7 | (27-40") F brown sand with TR black cinder ash and SO gravel; dry; no odor. (40-45") F orange/yellow sand; dry; no odor. (45-72") F gray stained/ brown sand with TR silt and TR gravel; saturated with petroleum; wet at 69"; sheen observed; heavy petroleum odor. |
| C | 4-6 | | 1115 | 16.5 | |
| D | 6-8 | 28/48 | | 7.2 | |
| E | 8-10 | | | 7.2 | (92-97") F gray sand with TR silt with water; heavy petroleum odor. (97-120") F brown stained sand with LI silt; saturated with water; heavy petroleum odor. |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | N/A | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler


Boring No.: B08
Date: 1/27/00
Within 100' of Water: Yes
Instrument: Thermo Environment
Instruments, Inc., Model 580B OVM
Boring Depth: 10.0'
Depth to Water: 8.5'
Logged By: Jason Wiggin

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1110 | 0.0 | (0-6") F/C brown sand; TR gravel; TR silt; dry. (6-24") F/C black cinder ash. |
| B | 2-4 | 40/48 | | 0.4 | (32-35") F/C black cinder ash. (35-48") F/C yellow-brown sand; LI gravel; TR silt; dry. (48-72") F/C yellow-brown sand; LI gravel; TR silt; TR porous cinders, TR black ash; dry |
| C | 4-6 | | 1125 | 1.4 | |
| D | 6-8 | 22/48 | | 1.4 | (96-100") F/C brown sand; LI gravel; TR silt. (100-103") M/C black cinder ash. (103-120") gray-dark gray silt and sand; black staining; wet. |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG

|  2 West Exchange Street, Suite 101 Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731 | | | | | Site: Providence Gas Company 642 Allens Avenue, Providence, RI | | Boring No.: B09 | | |
|---|---------------------|-----------------------------|------------------------|-----------|--|--|--|-----------------|-----------------|
| | | | | | ESS Job No: P151-002 | | Date: 1/27/00 | | |
| | | | | | Driller.: Environmental Drilling, Inc. | | Within 100' of Water: Yes | | |
| | | | | | Well Diameter: N/A | | Instrument: Thermo Environmental instruments, Inc., Model 580B OVM | | |
| | | | | | Drilling Method: Geoprobe | | Boring Depth: 6.0' | | |
| | | | | | Sample Method: 4' Acetate Sampler | | Depth to Water: 3.5' | | |
| | | | | | Logged By: Daryll Issa | | | | |
| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) | | | | |
| A | 0-2 | 24/24 | 1130 | 0.0 | (0-18") F/M brown sand with SO black sand, LI gravel, LI silt and LI small/M, shiny/dull black cinders; dry; light petroleum odor. (18-24") F/M brown/reddish stained cinders and cinder ash with LI gravel; dry; no odor. | | | | |
| B | 2-4 | 43/48 | 1148 | 1.4 | | | | | |
| C | 4-6 | | | 4.8 | | | | | |
| D | 6-8 | | | | | | | | |
| E | 8-10 | | | | | | | | |
| F | 10-12 | | | | | | | | |
| G | 12-14 | | | | | | | | |
| <u>Comments:</u> | | | | | | | | | |
| PROPORTIONS USED | | | ABBREVIATIONS | | Well Construction | | DEPTH INTERVALS | | |
| TRACE (TR) | 0-10% | F = FINE | M = MEDIUM | | N/A | | A = 0-24 in. | G = 144-168 in. | |
| LITTLE (LI) | 10-20% | C = COARSE | F/M = FINE TO MEDIUM | | | | B = 24-48 in. | H = 168-192 in. | |
| SOME (SO) | 20-35% | F/C = FINE TO COARSE | M/C = MEDIUM TO COARSE | | | | C = 48-72 in. | I = 192-216 in. | |
| AND | 35-50% | | | | | | | D = 72-96 in. | J = 216-240 in. |
| | | | | | | | | E = 96-120 in. | K = 240-264 in. |
| | | | | | | | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B10

Date: 1/27/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Jason Wiggin

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1150 | 1.0 | (0-12") F/M brown/light brown sand; TR gravel; TR silt. (12-24") F/C black cinder ash; SO cinders; TR porous cinders. |
| B | 2-4 | 47/48 | 1215 | 4.2 | (25-48") F/C black cinder ash; SO gravel size cinders; LI porous cinders; dry. (48-55") F/C black cinder ash; SO gravel size cinders; LI porous cinders; dry. (55-72") F brown/gray sand; SO silt; wet. |
| C | 4-6 | | | 37.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI

ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B11

Date: 1/27/00

Within 100' of Water: No

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 4.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1330 | 2.8 | (0-3") gravel and gray stained/green soil; wet from snow; light sweet odor. (3-19") F/M brown sand and silt; gray/black with TR cinders; damp; no odor. (19-24") F dense cinder ash and black cinders; dry; no odor. |
| B | 2-4 | 45/48 | 1345 | 11.3 | (27-45") black/orange cinders with SO cinder ash and LI gravel and TR silt at 27"; dry; no odor. (45-59") F black stained sand with LI silt and SO black cinder ash and black cinders; wet; heavy odor. (59-72") F gray/brown stain sand with TR silt; saturated with water; heavy petroleum odor. |
| C | 4-6 | | | 28.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: B18
Date: 1/27/00
Within 100' of Water: No
Instrument: Thermo Environment
Instruments, Inc., Model 580B OVM
Boring Depth: 8.0'
Depth to Water: 6.5'
Logged By: Jason Wiggin

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | | 1330 | 0.0 | See note below |
| B | 2-4 | 12/24 | | 1.4 | (26-28") black cinders (>2" diameter). (28-32") Tan silty sand "beach sand". (32-48") F/M brown sand; TR gravel; TR silt; TR cinder ash. (56-60") F/M brown sand; TR gravel; TR silt; TR cinder ash. (60-72") F/C black cinder ash; SO cinders; TR porous cinders. (72-78") C red and brown cinder ash and brick fragments. (78-96") gray sandy/silt; wet |
| C | 4-6 | | 1345 | 0.0 | |
| D | 6-8 | 40/48 | | 0.0 | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| | | | | | |
| G | 12-14 | | | | |

Comments:
Note: (0-2') interval inadvertently retrieved within limits of remediation material handling area. Sample discarded. No other surface sample retrieved.

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | N/A | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: D93

Date: 1/28/00

Within 100' of Water: Yes

Instrument: Thermo Environmen.
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 4.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1440 | 0.0 | (0-5") F/C yellow/light tan sand with LI gravel; dry; no odor. (5-14") small/M black cinders with SO cinder ash; dry; no odor. (14-24") small/M black and orange cinders with SO cinder ash; dry; no odor. |
| B | 2-4 | 35/48 | | 0.0 | (37-48") M/large black cinders with SO cinder ash; dry; no odor. (48-56") F/M gray/brown sand with LI gravel; wet; no odor. (56-72") F/C brown/gray sand with LI gravel; saturated with water at 60"; no odor. |
| C | 4-6 | | 1455 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

PROPORTIONS USED

TRACE (TR) 0-10%
LITTLE (LI) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

Well Construction

DEPTH INTERVALS

A = 0-24 in. G = 144-168 in.
B = 24-48 in. H = 168-192 in.
C = 48-72 in. I = 192-216 in.
D = 72-96 in. J = 216-240 in.
E = 96-120 in. K = 240-264 in.
F = 120-144 in. L = 264-288 in.

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: D94

Date: 1/28/00

Within 100' of Water: Yes

Instrument: Thermo Environmental
Instruments, Inc., Model 580B OVM

Boring Depth: 6.0'

Depth to Water: 5.0'

Logged By: Daryll Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1425 | 0.0 | (0-6") F/M brown/dark brown sand with SO gravel; dry; no odor. (6-11") F/M light brown sand with LI gravel; dry; no odor. (11-24") small/large black shiny/dull cinders with SO cinder ash; dry; faint odor. (30-33") black cinders and cinder ash; dry; no odor. (33-72") F light brown sand with LI gravel; wet at 60-72"; no odor. |
| B | 2-4 | 42/48 | | 0.0 | |
| C | 4-6 | | 1440 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

Soil Boring Report

PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. **VHB-4**
 Well ID: **NA**
 Job Number: **71274** Sheet 1 of 1

Drilling Company: **Subsurface Drilling and Remediation**

Boring Location:


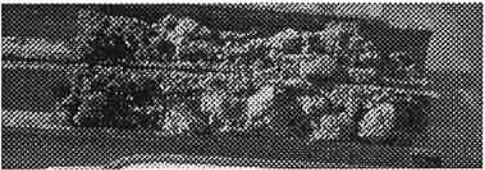
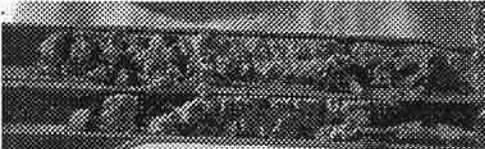


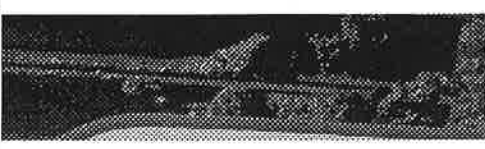
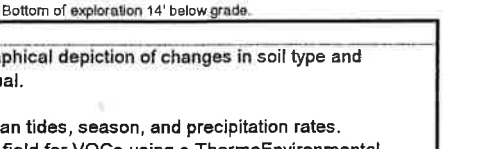
Driller: **Jim Goldthwaite / Josh Downing**

Elevation: **NA** Datum: **NA**

Inspector: **Keith Sullivan / Adam Rosenblatt**

Start Date: **1/14/2002** End Date: **1/14/2002**

The borings were drilled by hollow-stem auger. Unless otherwise noted, the soil samples were collected using a 2" split-spoon driven with a 140-lb. hammer falling 30".

| Depth (ft) | PID Reading | Sample No. | Pen/Rec | Blows/6" | SAMPLE DESCRIPTION | Boring Photo |
|------------|-------------|------------|---------|---------------------|---|--|
| 0 - 2 | 1.2 | S1 | 24 / 13 | 2 - 4 9 - 9 | Very dark grayish brown (10YR 3/2) over black (10YR 2/1) over very dark grayish brown (10YR 3/2) over light brownish gray (2.5Y 6/2) over black (10YR2/1), medium dense, fine SAND, little silt, some gravel, moist, no sheen or odors. |  |
| 2 - 4 | ND | S2 | 24 / 9 | 5 - 6 14 - 20 | Black (10YR 2/1) over light brownish gray (2.5Y 6/2), medium dense, fine SAND, some gravel, moist, no sheen or odors. |  |
| 4 - 6 | 3.0 | S3 | 24 / 13 | 6 - 9 6 - 7 | Very dark grayish brown (10YR 3/2) over light brownish gray (2.5Y 6/2), medium dense, fine SAND, some gravel, wet, no sheen or odors. |  |
| 6 - 8 | 53.0 | S4 | 24 / 13 | 5 - 3 2 - 5 | Light brownish gray (2.5Y 6/2), loose, fine sand, trace gravel over black (10YR 2/1) fine sand, some silt, wet, faint chemical odor. |  |
| 8 - 10 | 52.0 | S5 | 24 / 14 | 5 - 1 1 - 2 | Grayish brown (10YR 5/2), very loose, fine sand, little silt, trace gravel, wet, faint chemical odor, separate phase product. |  |
| 10 - 12 | 46.0 | S6 | 24 / 6 | w/rod - 3 6 - 10 | Dark gray to dark grayish brown (2.5Y4/1-4/2) loose, fine sand, little silt, trace gravel, wet, faint chemical odor, separate phase product on sample bag. |  |
| 12 - 14 | 20.0 | S7 | 24 / 4 | 4 - 5 9 - 10 | Black, medium dense, fine sand, little silt, some gravel, wet, moderate chemical odor, slight sheen on sample, stained. |  |

Bottom of exploration 14' below grade.

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | Notes |
|------------------------------------|----------|------------------------------------|----------|-------------|----------|-------|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

Soil Boring Report







PROJECT
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. MHA-4
 Well ID: NA
 Job Number: 71274
 Sheet 1 of 1

Drilling Company: Subsurface Environmental Drilling
 Driller: Phil/Brad
 Inspector: Claude Masse / Chris Mazzolini

Boring Location: Northeast portion of MHA,
 Elevation: NA Datum: NA
 Start Date: 1/28/2003 End Date: 1/28/2003

The borings were advanced by a hollow stem auger. Unless otherwise noted, the soil samples were collected using a two-foot split-spoon driven with a 140 lb. hammer falling 30 inches.

| Depth (ft.) | PID Reading | Sample No. | Pen/Rec (in.) | Blows/ft | SAMPLE DESCRIPTION | Boring Photo |
|-------------|-------------|------------|---------------|-------------|--|---|
| 0 - 2 | NA | | NA | AFS | Auger to approximately two feet below grade because surficial soil was frozen. | No Photo Available. |
| 2 - 4 | NA | S-1 | 24/18 | 12/14/14/10 | Tan, very fine sand (former MHA base?); over Black, medium to coarse sand, fly ash, brick and slag. |  |
| 4 - 6 | 37 | S-2 | 24/12 | 3/4/5/9 | Black to brown, medium to coarse sand, fill, with ash, slag and brick, moist. Wet at 6 ft. |  |
| 6 - 8 | NA | S-3 | 24/12 | 10/5/3/8 | Black, fine to coarse, with trace gravel; wet with odor. |  |
| 8 - 10 | 115 | S-4 | 24/24 | 18/20/16/16 | 12 in. of black medium to coarse sand, wet; over 18 in. of light gray, ver fine sand to fine sand, odor; over 3 in. of black, very coarse sand and gravel, wet. |  |
| 10 - 12 | 101 | S-5 | 24/12 | 10/7/6/7 | Black, fine sand and silt; over Brown to gray, fine sand and some gravel; odor, wet. |  |
| 12 - 14 | 207 | | 24/24 | 10/6/16/32 | Dark gray to gray, fine to medium sand and silt; odor, wet |  |
| | | | | | | Bottom of exploration 14 ft. below grade. |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | PROPORTIONS | NOTES |
|---------------------------------|---------------------------------|--------------------|--|
| 0 - 4 V. Loose | <2 V. Soft | Trace 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grain size. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID). 5) AFS = Auger Flight Sample 6) NSR = No Sample Recovered |
| 4 - 10 Loose | 2 - 4 Soft | Little 10 - 20% | |
| 10 - 30 M. Dense | 4 - 8 M. Stiff | Some 20 - 35% | |
| 30 - 50 Dense | 8 - 15 Stiff | And 35 - 50% | |
| >50 V. Dense | 15 - 30 V. Stiff | | |
| | >30 Hard | | |

Soil Boring Report

PROJECT

New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Report of Boring No. MHA-5

Well ID: NA

Job Number: 71274

Sheet 1 of 1

Drilling Company: Subsurface Environmental Drilling

Driller: Phil/Brad

Inspector: Claude Masse / Chris Mazzolini

Boring Location: West of MHA-4, along the northern portion of the MHA.




Elevation: NA

Datum: NA

Start Date: 1/28/2003

End Date: 1/28/2003

The borings were advanced by a hollow stem auger. Unless otherwise noted, the soil samples were collected using a two-foot split-spoon driven with a 140 lb. hammer falling 30 inches.

| Depth (ft.) | PID Reading | Sample No. | Pen/Rec (in.) | Blows/6 in. | SAMPLE DESCRIPTION | Boring Photo |
|-------------|-------------|------------|---------------|-------------|--|---|
| 0 - 2 | NA | | NA | AFS | Auger to approximately two feet below grade because surficial soil was frozen. | No Photo Available. |
| 2 - 4 | NA | S-1 | 24/18 | 19/9/10/10 | 21 in. of brown, fine sand with silt and gravel; over 3 in. of black, medium sand with fly ash, slag and brick. |  |
| 4 - 6 | 37 | S-2 | 24/6 | 7/8/5/6 | Dark brown to black, fine to coarse sand with gravel, ash, coal and slag. |  |
| 6 - 8 | NA | S-3 | 24/6 | 5/6/11/12 | 3 in. of black, coarse sand and slag; over 3 in. brown to tan, fine sand and silt; no odor. |  |
| 8 - 10 | NER | S-4 | 24/1 | 6/7/3/4 | NER = Not Enough Recovery. Brown to tan, fine sand and silt with coarse gravel; no odor. | |
| 10 - 12 | NA | S-5 | NSR | 1/1 | One blow for one foot. | No Photo Available. |
| 12 - 14 | NA | S-6 | NSR | 1/3/2/2 | Very loose material and gravel, very wet, no odor. | No Photo Available. |
| | | | | | | Bottom of exploration 14 ft. below grade. |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | PROPORTIONS | | NOTES |
|---------------------------------|----------|---------------------------------|----------|-------------|----------|--|
| 0 - 4 | V. Loose | <2 | V. Soft | Trace | 0 - 10% | 1) Soil stratification lines represent a graphical depiction of changes in soil type and grain size. Actual changes may be gradual. 2) Bedrock was not encountered. 3) Water levels may fluctuate due to ocean tides, season, and precipitation rates. 4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10 eV photoionization detector (PID). 5) AFS = Auger Flight Sample 6) NSR = No Sample Recovered |
| 4 - 10 | Loose | 2 - 4 | Soft | Little | 10 - 20% | |
| 10 - 30 | M. Dense | 4 - 8 | M. Stiff | Some | 20 - 35% | |
| 30 - 50 | Dense | 8 - 15 | Stiff | And | 35 - 50% | |
| >50 | V. Dense | 15 - 30 | V. Stiff | | | |
| | | >30 | Hard | | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 11/15/71
 HOLE NO. 61
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.5'

TO Haley & Aldrich Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence, Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|------------------------|---------------|-----------|-----------------------------|------|
| At <u>6'-8'</u> | after _____ | Hours | Type <u>RODS-"AW"</u> | <u>S/S</u> | _____ | START <u>11/15/71</u> | a.m. |
| At _____ | after _____ | Hours | Size I.D. <u>H+BW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>11/17/71</u> | p.m. |
| | | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT | TOTAL HRS. _____ | |
| | | | Hammer Fall <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>Gomes</u> | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|-----------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec |
| 7 | | 0'-1'6" | D | 4 | 5 | 6 | Moist Loose | | Black Cinders & Ashes, Fill | 1 | 18' | 11" |
| 7 | | | | | | | | 3' | | | | |
| 8 | | | | | | | | | | | | |
| 5 | | | | | | | Moist | | Brown Peat Mixed with Sand, Cinders, Fill | | | |
| 6 | | | | | | | | | | | | |
| 3 | | 5'-6'6" | D | 2 | 1 | 1 | | 8' | | 2 | 18' | 9" |
| 4 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | | | Loose Wet | | Fine to Med. SAND, Few Small Gravel, Trace Silt | | | |
| 7 | | | | | | | | | | | | |
| 9 | | 10'-11'6" | D | 8 | 6 | 4 | | | | 3 | 18' | 6" |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | -Fill- | | | |
| 14 | | | | | | | | | | | | |
| 27 | | 15'-16' | D | 10 | 4 | | | 16' | | 4 | 18' | 5" |
| 13 | | 16'-16'6" | D | 3 | | | | | Organic Silt | 4A | 6" | 4" |
| 13 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 20 | | 19'-21' | S | | | | | 21' | Pressed 2" Shelby No Rec. | | | |
| 26 | | | | | | | | | Med. Comp. Gr. Gravel, Med. to Fine Sand, Silt, Shells | 5 | 24' | 10" |
| 32 | | 21'-23' | D | 13 | 19 | 10 | Moist M.D. | | | | | |
| 27 | | | | 14 | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 90 | | 25'-26'6" | D | 18 | 14 | 10 | | | | 6 | 18' | 3" |
| 121 | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 20 | | 30'-31'6" | D | 30 | 28 | 24 | | | Boulders Fragments | 7 | 18' | 6" |
| 62 | | 31'6"-33' | D | 17 | 21 | 29 | | | Brown Gravel, Coarse to Fine Sand, Silt | 8 | 18' | 10" |
| 80 | | | | | | | | | | | | |
| 76 | | | | | | | | | | | | |
| 104 | | | | | | | | | | | | |
| 42 | | 35'-36'6" | D | 20 | 27 | 33 | | | | 9 | 18' | 10" |
| 63 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |

GROUND SURFACE TO 46'6"

USED 30" I.D. "CASING: THEN 45'-15"

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 30'6"
 Rock Coring 0
 Samples 11

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE 10/8/71
 HOLE NO. 62
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|------------------------------|---------------|-----------|-----------------------------|------------|
| At <u>8'-9'</u> | after _____ | Hours | Type <u>RODS - "AW"</u> | <u>S/S</u> | _____ | START <u>11/8/71</u> | _____ a.m. |
| At _____ | after _____ | Hours | Size I.D. <u>4" H-2 1/2"</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>11/15/71</u> | _____ p.m. |
| | | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT | TOTAL HRS. _____ | |
| | | | Hammer Fall <u>24"</u> | <u>30"</u> | _____ | BORING FOREMAN <u>Gones</u> | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | | | | | | | | Probed For Utilities From 0'-5' | | | |
| | | | | | | | | 5' | | | | |
| 12 | | 5'-6'6" | D | 4 | 5 | 5 | Moist Loose | | Black Cinders | 1 | 18' | 10' |
| 17 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 19 | | 10'-11'6" | D | 12 | 10 | 8 | " " | | Fill | 2 | 18' | |
| 27 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 10 | | 15'-16'6" | D | 5 | 3 | 3 | " " | 16'6" | No Rec. | | | |
| 5 | | | | | | | | | | | | |
| 7 | | 16'6"-18' | D | 3 | 2 | 2 | | | Organic Silt | 3 | 18' | 10' |
| 11 | | | | | | | | | | | | |
| 10 | | 18'-20' | | | | | | | | | | |
| 18 | | | | | | | | 20'6" | Tube 2" Shelby- 23" Rec. | | | |
| 26 | | | | | | | | | Tried Piston 21'-23', No Penetration | | | |
| 26 | | 21'-23' | D | 10 | 8 | 8 | | | Fine Med. Gravel, Sand, Trace Silt | 4 | 24' | 9" |
| 24 | | | | 7 | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 41 | | 25'-26'6" | D | 18 | 17 | 8 | | | | 5 | 18' | 14' |
| 38 | | | | | | | | 27' | | | | |
| 19 | | 26'6"-27'6" | D | 11 | 3 | 3 | | | Sandy Silt | 6 | 18' | 14' |
| 18 | | | | 3 | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 40 | | 30'-32' | | | | | | | Shelby Missed | | | |
| 27 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 38 | | 32'-34' | PUSHED | | | | | | No. Rec. | | | |
| 30 | | | | | | | | | | | | |
| | | 35'-36'6" | D | 1 | 1 | 2 | | | Soft Gr. Organic Silt | 7 | 18' | 12' |
| | | | | | | | | | | | | |
| | | 38'-39'3" | | | | | | | Piston 16" Rec. | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 117
 Rock Coring _____
 Samples 22

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

DATE _____
 HOLE NO. 62
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | BIT _____ | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | 39'6"-41' | D | 3 | 4 | 4 | Soft Moist | | Gr. Organic Silt, Tr. Peat Fibers | 8 | 18" | 14" |
| | | 43'-45' | HP | | | | | 45' | 3" Piston 22" Rec. | | | |
| | | 45'-46'6" | D | 5 | 9 | 8 | Moist Soft | 48' | Med. Gr. Silt Sand, Trace Med. Sand, Tr. Org. | 9 | 13" | 14" |
| | | 50'-51'6" | D | 8 | 10 | 13 | Med. Dense | | Silty Sand, Yellow Gray Mottled Clay Lenses | 10 | 18" | 17" |
| | | 55'-56'6" | D | 13 | 14 | 12 | | | | 11 | 18" | 14" |
| | | 60'-61'6" | D | 16 | 12 | 14 | | | | 12 | 18" | 16" |
| | | 65'-66'6" | D | 22 | 24 | 28 | | 67'6" | | 13 | 16" | 11" |
| | | 70'-71'6" | D | 13 | 20 | 14 | Moist M.D. | | Compact Gr. Silty, Fine Sand | 14 | 18" | 12" |
| | | 75'-76'6" | D | 16 | 14 | 14 | | 78' | | 15 | 18" | 12" |
| | | | | | | | Moist Med. D. | | 2'5" Running Sand @ 80' | | | |
| | | | | | | | | | Med. Comp. Gr. Fine Sand | | | |

Casing

GROUND SURFACE TO _____ USED _____ CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 62

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 62

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|-------------------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | o.m. |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | o.m. |
| | | Hammer Fall _____ | _____ | BIT _____ | BORING FOREMAN _____ | p.m. |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | 38 | 80'-82' | D | 6 | 7 | 12 | Moist M.D. | | Med. Comp. Gr. Fine Sand | 16 | 24" | 16" |
| | 32 | | | 14 | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 38 | 85'-87' | D | 6 | 6 | 7 | | | | 17 | 24" | 15" |
| | 42 | | | 6 | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 53 | | | | | | | | | | | |
| | 68 | | | | | | | | | | | |
| | 60 | 90'-91'6" | D | 6 | 8 | 10 | | | | 18 | 18" | 12" |
| | 68 | | | | | | | | | | | |
| | 140 | | | | | | | | | | | |
| | 160 | | | | | | | | | | | |
| | 181 | | | | | | | | | | | |
| | 32 | 95'-97' | D | 5 | 5 | 8 | | | | 19 | 24" | 14" |
| | 61 | | | 9 | | | | | | | | |
| | 68 | | | | | | | | | | | |
| | 96 | | | | | | | | | | | |
| | 124 | | | | | | | | | | | |
| | 126 | 100'-102' | D | 19 | 12 | 11 | | | | 20 | 24" | 16" |
| | 140 | | | 12 | | | | | | | | |
| | 140 | | | | | | | 103' | | | | |
| | 151 | | | | | | | | | | | |
| | 103 | | | | | | | | Comp. Gr. Sand Trace Silt | | | |
| | 64 | 105'-107' | D | 20 | 18 | 20 | | | | 21 | 24" | 18" |
| | 82 | | | 14 | | | | | | | | |
| | 84 | | | | | | | | | | | |
| | 83 | | | | | | | | | | | |
| | 107 | | | | | | | | | | | |
| | 70 | 110'-112' | D | 12 | 12 | 8 | | | | 22 | 24" | 16" |
| | 86 | | | 7 | | | | | | | | |
| | 94 | 115'-117' | D | 20 | 20 | 21 | | 117' | No Rec. | | | |
| | 112 | | | 24 | | | | | Bottom of Boring at 117' | | | |
| | 88 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

#450

GROUND SURFACE TO 45'-0" 45' USED 115'-2" CASING: THEN _____

| | | |
|--|---|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense |
| | | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |

SUMMARY:
 Earth Boring 117'
 Rock Coring 0
 Samples 22
 HOLE NO. 62

TOWN PRESS - EAST PROV

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE 12/31/71

HOLE NO. 70

LINE & STA. _____

OFFSET _____

SURF. ELEV. 7.6

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Providence Gas Co.

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. 71-508

| | | | | | |
|---|--|--|--|--|--|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>9'0"</u> after <u>0</u> Hours <u>9:40 AM - 1/3/72</u> with <u>20' HW Casing</u></p> <p>At <u>5'</u> after <u>0</u> Hours <u>No Casing</u></p> | <p>Rods - "AW" Type _____ Size I.D. <u>4" / 2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u></p> | <p>CASING HW _____ BW _____ <u>4" / 2 1/2"</u></p> | <p>SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u></p> | <p>CORE BAR. _____ _____ _____ BIT</p> | <p>Date _____ Time _____</p> <p>START <u>12/31/71</u> a.m. p.m.</p> <p>COMPLETE <u>1/3/72</u> a.m. p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN <u>Quagliaroli</u></p> <p>INSPECTOR <u>R. Varum</u></p> <p>SOILS ENGR. _____</p> |
|---|--|--|--|--|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|--|---|----------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 10 | | | | | | | | Gray Brown Fine to Coarse SAND, Trace Fine Gravel, Trace Silt, Cinders, Fill | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | 5'-6'6" | D | 4 | 5 | 5 | Moist Loose | | Note: 10'-11'6" 3" Rec. On Second Attempt | 1 | 18' | 14" |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | 10'-11'6" | D | 4 | 2 | 2 | Wet Loose | Same (Oil Soaked) | 2 | 18' | 3" | |
| 11 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | 15'-16'6" | D | 4 | 1 | 1 | Wet | 15'6" | 3 | 18' | 12" | |
| 10 | | 16'6"-18' | D | 1 | 1 | 3 | Loose | | 4 | 18' | 14" | |
| 15 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 26 | | | | | | | | 20' | | | | |
| 9 | | 20'-21'6" | D | 8 | 2 | 1 | Wet Loose | | 0 | 18' | 0 | |
| 16 | | 21'6"-23' | D | 7 | 5 | 2 | | | 0 | 18' | 0 | |
| 17 | | 23'-25' | W | | | | | | 5 | Wash Sam | | |
| 19 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 8 | | 25'-26'6" | D | 12 | 13 | 12 | Wet M.D. | | 6 | 18' | 4" | |
| 9 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | 30' | | | | |
| 8 | | 30'-31'6" | D | 16 | 17 | 19 | Wet Dense | | 7 | 18' | 14" | |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 15 | | 35'-36'6" | D | 12 | 16 | 17 | Wet Dense | | 8 | 18' | 12" | |
| 26 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 42 | | 40'-41'6" | D | 42 | 24 | 27 | Wet V.D. | | 9 | 18' | 14" | |

| | | | |
|--|--|---|---|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>"CASING: THEN _____</p> <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense</p> <p>Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring <u>51'6"</u> Rock Coring _____ Samples <u>11</u></p> <p>HOLE NO. <u>70</u></p> |
|--|--|---|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE 1/3/72
 HOLE NO. 70A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 6.7

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>0</u> Hours 1:00 1/3/72 At <u>20' Casing</u> after _____ Hours | Rods - "AW" Type <u>BW</u> CASING <u>S/S</u> SAMPLER _____ CORE BAR. _____ Size I.D. <u>2 1/2"</u> <u>1 3/8"</u> Hammer Wt. <u>300#</u> <u>140#</u> BIT _____ Hammer Fall <u>24"</u> <u>30"</u> | Date _____ Time _____ START <u>1/3/72</u> _____ a.m. COMPLETE <u>1/3/72</u> _____ p.m. TOTAL HRS. _____ BORING FOREMAN <u>Quagliaroli</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 4 | | | | | | | | | Black Oily SAND, Silt, Gravel Cinders, Fill | | | |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 4 | | 10'-11'6" | D | 4 | 1 | 2 | Wet Loose | 13' | | 1 | 18' | 16' |
| 5 | | | | | | | | | | | | |
| 4 | | 12'-13' | D | 2 | 1 | | | | | 2 | 12' | 10' |
| 3 | | 13'-14' | D | 1 | 2 | | Wet Loose | 15' | Black PEAT & Oily Fine Sand | 2A | 12' | 9' |
| 3 | | | | | | | | | | | | |
| 4 | | 15'-16'6" | D | 1 | 1 | 1 | Wet Soft | 17' | Black Gray Org. SILT | 3 | 18' | 17' |
| 5 | | | | | | | | | | | | |
| 5 | | 17'-19' | Push 2" Shelby | | | | | | Gray Fine to Coarse SAND, Some Org. Silt & Fine to Med. Gravel | 4 | 24" | 9" |
| 7 | | | | | | | | | | | | |
| 13 | | | | | | | | 20' | | | | |
| 8 | | 20'-21'6" | D | 9 | 5 | 8 | Wet M.D. | | Black Gray Fine to Coarse Oily SAND, Some Fine to Coarse Gravel, & org. Silt | 5 | 18' | 14' |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 13 | | | | | | | | 25' | | | | |
| 9 | | 25'-26'6" | D | 7 | 5 | 5 | Wet Loose | | Black Gray Oily Fine to Coarse SAND, Some Fine to Coarse Gravel, Org. Silt Possible Fill | 6 | 18' | 6' |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 22 | | | | | | | M.D. | | | | | |
| | | 30'-31'6" | D | 13 | 13 | 12 | Wet | 31'6" | | | | |
| | | | | | | | | | Bottom of Boring at 31'6" | | | |
| | | | | | | | | | NOTE: 17'-19' Push Shelby Sand & Gravel in Tube Put in Jar(S-4) | | | |

| | | | | |
|--|---|--|---|---|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>31'6</u> Rock Coring _____ Samples <u>7</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | | | | HOLE NO. _____ 70A |

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 1 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.78
Final Boring Depth (ft.): 36
Date Start - Finish: 5/19/2014 - 5/27/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 8.49 | 2 Days |
| 6/10/14 | 7:55 | 7.23 | 14 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Red-brown (10YR, 4/4) fine to coarse SAND, little Slag, trace Ash, trace Silt, dry | 1 2 | 0.4 | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/4) fine SAND, little Silt, trace Gravel, moist | | 0.1 | | | | | Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Yellow brown (10YR, /4) fine SAND, little Silt, trace Gravel, slight oil-like odor, moist/wet | | 22 | | Sigt | | FILL | |
| 4 | S-4 | 6-8 | 24 | 5 | WOH 1 1 11 | S-4 : Very loose, gray (GLE Y 1, 4/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, wet | | 3 | | | | | |
| 5 | S-5 | 8-10 | 24 | 0 | WOH 1 3 4 | S-5 : Loose, granular soil, no recovery | | 3 | NM | | | | |
| 6 | S-6 | 10-12 | 24 | 21 | 6 1 5 6 | S-6 : Loose, gray (GLE Y 1, 3/N) fine (+) to coarse SAND, little Silt, trace Gravel, slight oil-like odor, slight sheen, wet | | 242 | | Sigt | 10 | -0.2 | |
| 7 | S-7 | 12-14 | 24 | 13 | 9 8 9 9 | S-7 : Medium dense, gray (GLE Y 1, 3/N) fine (+) to coarse SAND, little Silt, trace Gravel, slight oil-like odor, slight sheen, wet | | 108 | | Sigt | | Possible Fill/Sands | PVC Riser |
| 8 | S-8 | 14-16 | 24 | 110 | 8 9 4 3 | S-8 : Medium dense, gray (GLE Y 1, 3/N) fine to coarse SAND, little (-) Gravel, little (-) Silt, slight oil-like odor, slight sheen, wet | | 104 | | | | | Filter Sand |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:26 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 2 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|---------------------|-------------|----------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Description | |
| 16 | S-9 | 16-18 | 24 | 6 | 4 5 | S-9 : Medium dense, gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, slight sheen, wet | | 205 | Slight | | | | |
| 17 | | | | | 8 6 | | | | | | | | Slight |
| 18 | S-10 | 18-20 | 24 | 8 | 6 27 | S-10 : Very dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, slight sheen, wet | 4 | 252 | Slight | | | | |
| 19 | | | | | 37 22 | | | | | | | | Slight |
| 20 | S-11 | 20-22 | 24 | 9 | 10 8 | S-11 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, wet | | 67 | | Possible Fill/Sands | | | |
| 21 | | | | | 3 3 | | | | | | | | Slight |
| 22 | S-12 | 22-24 | 24 | 1 | 5 7 | S-12 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, wet | | 32 | | | | | |
| 23 | | | | | 7 1 | | | | | | | | Slight |
| 24 | S-13 | 24-26 | 24 | 4 | 15 12 | S-13 : Dense, gray (GLEY 1, 3/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, wet | | 48 | | | | Bentonite Seal | |
| 25 | | | | | 18 15 | | | | | | | | Slight |
| 26 | S-14 | 26-28 | 24 | 9 | 14 18 | S-14 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, wet | | 3 | | 26 | -16.2 | | |
| 27 | | | | | 9 9 | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 8 | 9 6 | S-15 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace (+) Gravel, trace (+) Silt, wet | | 3 | | | | Well Screen | |
| 29 | | | | | 5 4 | | | | | | | | |
| 30 | S-16 | 30-32 | 24 | 2 | 6 5 | S-16 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace Gravel, trace Silt, wet | | 0.5 | | | | | |
| 31 | | | | | 7 6 | | | | | | | | |
| 32 | S-17 | 32-34 | 24 | 12 | 6 6 | S-17 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace Gravel, trace Silt, wet | | 2 | | | | Filter Sand | |
| 33 | | | | | 12 16 | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 36 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-26 feet bgs; Filter Sand placed in annulus from 0-2, 3-24 and 25-36 feet bgs; Bentonite Seals installed from 2-3 and 24-25 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 3 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 34 | S-18 | 34-36 | 24 | 11 | 15 13 18 18 | S-18 : Dense, gray (GLEY 1, 5/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | 1 | | | | SAND | | <p>Well Screen</p> |
| 35 | | | | | | | | | | | 36 | -26.2 | | |
| 36 | | | | | | End of exploration at 36 feet. | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-313D**

TABLE V-1 - SOIL TPH FINGERPRINTING RESULTS

File No. 03.0033554.01

RCA-3 DNAPL DATA GAP

1/5/2024

642 Allens Ave

Providence, Rhode Island

| | Units | RCA-3 | ETP-38 | GZ-313D |
|-------------------------------------|-------|---------------|------------|-----------|
| | | 8 - 10 ft bgs | 8.5 ft bgs | 18-20 FT |
| | | 1994 | 1996 | 5/27/2014 |
| Total Petroleum Hydrocarbons | | | | |
| Hydrocarbon Content | mg/kg | 11,100 | 9,580 | 1,210 |

Notes:

1. The characteristics of the chromatogram for soil sample RCA-3 8-10 ft bgs indicate "Fuel Oil".
2. The characteristics of the chromatogram for soil sample ETP-38 8.5 ft bgs indicate "Fuel Oil mixed with Coal Tar".
3. The characteristics of the chromatogram for GZ-313D 18-20 ft bgs indicate that the product is composed exclusively of tar impacted hydrocarbons. The tar material present in this sample indicates varying degrees of weathering.

**TABLE V-2 - GROUNDWATER AND NAPL GAUGING
RCA-3 DNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2011 | | | | | | | August 2011 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 8.51 | trace | 17.75 | 2.93 | NP | trace | 2.93 | - | 8.45 | trace | 17.75 | 2.99 | NP | trace | 2.99 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | | | | | | | | | | | | | | | | |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the CNG Fueling Station portion of the Property

Elevations are relative to City of Providence Datum

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE V-2 - GROUNDWATER AND NAPL GAUGING
RCA-3 DNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | February 2012 | | | | | | | July 2012 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 9.4 | trace | 17.55 | 2.04 | NP | trace | 2.04 | - | 7.91 | trace | 17.55 | 3.53 | NP | trace | 3.53 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | | | | | | | | | | | | | | | | |

Notes

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**TABLE V-2 - GROUNDWATER AND NAPL GAUGING
RCA-3 DNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | February 2013 | | | | | | | November 2013 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 9.25 | trace | 17.65 | 2.19 | NP | trace | 2.19 | - | 9.44 | trace | 17.7 | 2.00 | NP | trace | 2.00 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | | | | | | | | | | | | | | | | |

Notes

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the CNG Fueling Station portion of the Property

Elevations are relative to City of Providence Datum

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE V-2 - GROUNDWATER AND NAPL GAUGING
RCA-3 DNAPL DATA GAP**

File No. 03.0033554.01
1/5/2024

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2014 | | | | | | | July 2, 2014 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 8.82 | Trace | 17.8 | 2.62 | NP | Trace | 2.62 | - | 8.91 | Trace | 18.11 | 2.53 | NP | Trace | 2.53 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 8.17 | - | 38.2 | 3.47 | NP | NP | 3.47 | - | 8.57 | - | 38.11 | 3.07 | NP | NP | 3.07 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
 - Well is located at the LNG Facility
 - Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to City of Providence Datum
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE V-2 - GROUNDWATER AND NAPL GAUGING
RCA-3 DNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 23, 2014 | | | | | | | October 2014 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 9.49 | Trace | 17.91 | 1.95 | NP | Trace | 1.95 | - | 9.35 | Trace | 18.1 | 2.09 | NP | Trace | 2.09 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 10.16 | - | 38.05 | 1.48 | NP | NP | 1.48 | - | 8.71 | - | 38.2 | 2.93 | NP | NP | 2.93 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
 - Well is located at the LNG Facility
 - Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to City of Providence Datum
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE V-2 - GROUNDWATER AND NAPL GAUGING
RCA-3 DNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | April 2015 | | | | | | | October 2015 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| NG | RCA-3 | 11.88 | 11.44 | 9.40 | Standpipe | Shallow | 9/9/1994 | 15.76 | 6 - 16 | NP | trace | - | 8.51 | trace | 18.1 | 2.93 | NP | trace | 2.93 | - | 9.24 | trace | 18 | 2.20 | NP | trace | 2.20 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 8.83 | - | 38.15 | 2.81 | NP | NP | 2.81 | - | 9.33 | - | 38.15 | 2.31 | NP | NP | 2.31 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
 - Well is located at the LNG Facility
 - Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to City of Providence Datum
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE V-3 - HISTORIC DNAPL THICKNESSES
RCA-3 DNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Date | Nov 2001 | Sept 2002 | Sept 2003 | Sept 2005 | Mar 2008 | Dec. 2009 | June 2010 | January 2011 | July 2011 | Aug 2011 | Feb 2012 | July 2012 | Feb 2013 | Nov 2013 | June 2014 | July 2, 2014 | July 23, 2014 | October 2014 | April 2015 | October 2015 | May 2016 |
|------------------------|----------|-----------|-----------|-----------|----------|-----------|-----------|--------------|-----------|----------|----------|-----------|----------|----------|-----------|--------------|---------------|--------------|------------|--------------|----------|
| DNAPL Thickness (feet) | | | | | | | | | | | | | | | | | | | | | |
| RCA-3 | 0.17 | trace | trace | trace | ND | ND | ND | trace | trace | trace | trace | trace | trace | trace | trace | trace | trace | trace | trace | trace | trace |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the CNG Fueling Station portion of the Property

NG - Not Gauged

RCA-3 was decommissioned in June 2016. May 2016 was the last reading.

This table presents NAPL thickness data for monitoring wells that have exhibited NAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

TABLE V-4 - GROUNDWATER ANALYTICAL DATA

RCA-3 DNAPL DATA GAP

642 Allens Avenue

Providence, Rhode Island

| | RIDEM GB Groundwater Objective | RIDEM GB Groundwater UCL | Well ID: | | RCA-3 | | | | | | | | | | | | | GZ-313D |
|--|--------------------------------|--------------------------|----------|--------------|-----------------------|---------------|----------------|----------------|------------|---------------|-----------|-------------|-----------|---------------|-----------|--------------|----------|-----------|
| | | | Date: | October 1994 | March 1996 | November 2001 | September 2003 | September 2005 | March 2008 | December 2009 | June 2010 | August 2011 | July 2012 | November 2013 | June 2014 | October 2015 | May 2016 | June 2014 |
| | | | Units | | | | | | | | | | | | | | | |
| EPA Method 8260B VOLATILE ORGANICS | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | 0.275 | 0.165 | 0.138 | 0.17 | ND | 0.074 | 0.034 | 0.08 | 0.0758 | 0.0668 | 0.076 | 0.148 | 0.116 | 0.0565 |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | 0.043 | 0.0302 | 0.0388 | ND | 0.011 | 0.0028 | 0.011 | 0.0072 | 0.0085 | 0.0118 | 0.024 | 0.025 | 0.0112 |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | 0.00321 | 0.0107 | NA | NA | NA | NA | 0.0024 | 0.0023 | 0.0039 | 0.0059 | 0.0089 | 0.0024 |
| Benzene | 0.14 | 18 | mg/L | ND | ND | ND | 0.00348 | 0.0011 | ND | ND | ND | ND | 0.0129 | 0.0113 | 0.0051 | 0.116 | 0.0049 | 0.0433 |
| Ethylbenzene | 1.6 | 16 | mg/L | 0.145 | ND | 0.061 | 0.0476 | 0.0523 | ND | 0.0049 | 0.0046 | 0.017 | 0.032 | 0.0323 | 0.0206 | 0.0841 | 0.0261 | 0.0147 |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0187 | 0.0225 | ND | 0.01 | 0.0043 | 0.014 | 0.0098 | 0.0098 | 0.0123 | 0.0228 | 0.0228 | 0.0111 |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0004 | 0.0004 | 0.003 |
| Naphthalene | 2.67 | NE | mg/L | ND | 2.05 | 2.19 | 0.878 | 0.65 | ND | 0.46 | 0.13 | 0.54 | 0.466 | 0.417 | 0.461 | 0.813 | 0.554 | 0.284 |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | 0.0059 | 0.0032 | 0.005 | 0.0052 | 0.005 | ND | 0.008 | 0.0121 | ND |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0106 | 0.0163 | ND | 0.0072 | 0.0037 | 0.0084 | 0.0054 | 0.0059 | 0.0075 | 0.0094 | 0.0122 | 0.0035 |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | 0.0028 | ND | ND | 0.0014 | ND | 0.0016 | 0.0016 | 0.0018 | 0.0021 | 0.0033 | ND |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0003 | ND | ND | 0.0009 | 0.0009 | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | 0.0013 | ND | ND | ND | ND | 0.0006 | ND | ND | 0.0006 | 0.0011 | ND |
| Toluene | 1.7 | 21 | mg/L | 0.035 | ND | ND | 0.00467 | 0.0024 | ND | ND | ND | ND | 0.0053 | 0.0048 | 0.0024 | 0.012 | 0.003 | 0.0018 |
| Xylene O | NE | NE | mg/L | NA | NA | NA | NA | NA | ND | 0.0036 | 0.0027 | 0.011 | 0.018 | 0.0195 | 0.0118 | 0.0525 | 0.0173 | 0.0153 |
| Xylene P,M | NE | NE | mg/L | NA | NA | NA | NA | NA | ND | 0.0052 | 0.0029 | 0.014 | 0.0132 | 0.0121 | 0.0104 | 0.0409 | 0.0192 | 0.0065 |
| Xylenes (Total) | NE | NE | mg/L | 0.395 | ND | 0.099 | 0.0607 | 0.078 | ND | 0.0052 | 0.0056 | 0.025 | 0.0311 | 0.0316 | 0.0222 | 0.0934 | 0.0365 | 0.0218 |
| Total VOCs | NE | NE | mg/L | 0.575 | 2.325 | 2.558 | 1.19516 | 1.0462 | ND | 0.5818 | 0.1896 | 0.7004 | 0.6557 | 0.5969 | 0.6246 | 1.3406 | 0.8272 | 0.4751 |
| Semi-Volatile Organic Compounds (SVOCs) | | | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | NE | NE | mg/L | 1.79 | 0.453 | 0.27 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | NE | NE | mg/L | 0.114 | 0.105 | 0.16 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NE | NE | mg/L | 0.363 | 0.082 | 0.016 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Anthracene | NE | NE | mg/L | ND | 0.041 | 0.028 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo [a] Anthracene | NE | NE | mg/L | ND | ND | 0.011 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NE | NE | mg/L | ND | ND | 0.013 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NE | NE | mg/L | ND | ND | 0.017 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | NE | NE | mg/L | 0.147 | 0.057 | 0.067 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | 2.67 | NE | mg/L | 5.22 | 1.42 | 0.99 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NE | NE | mg/L | 0.345 | 0.041 | 0.1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | NE | NE | mg/L | 0.164 | ND | 0.028 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | |
| TPH | NE | NE | mg/L | 27 | 11.9 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| TPH Fingerprint | NE | NE | N/A | Fuel Oil | Kerosene / C2-C3 PAHs | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:
 ND - Not Detected NE - Not Established
 NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

1. This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
 2. The detected concentrations were compared to RIDEM Method 1 Criteria.



APPENDIX W

DATA GAP – RCA-11 LNAPL

NOT MENTIONED
IN
VHB SIR

| RESOURCE CONTROLS | | | | | TEST BORING LOG | | | | | | |
|--|--------------------------------|-------------|----------------|--------------------|---|--|--|-------------------------------------|--|--|--|
| PROJECT: Providence Gas Company PROJECT NO.: A2000 048 LOCATION: 642 Allens Avenue, Providence, R.I. DRILLING CO.: American Drilling, Inc. DRILLED BY: Rick Leger INSPECTED BY: Daniel Lanier | | | | | BORING NO. RCA-21 PAGE 1 OF 1 DATE STARTED: 10/30/95 DATE FINISHED: 10/30/95 SURFACE ELEVATION: | | | | | | |
| GROUNDWATER OBSERVATIONS <table border="1"> <tr> <th>DEPTH</th> <th>STABILIZATION TIME</th> </tr> <tr> <td></td> <td>N/A</td> </tr> </table> | | | | | DEPTH | STABILIZATION TIME | | N/A | CASING SAMPLER TYPE: SIZE I.D.: Split Spoon HAMMER WT.: 1-3/8" x 24" HAMMER FALL: 140 lbs. 30 in. | | |
| DEPTH | STABILIZATION TIME | | | | | | | | | | |
| | N/A | | | | | | | | | | |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) | FIELD TEST DATA PID - 10.2 eV (ppm) | | | |
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | | | | |
| 5' | 2' | S-1 | | Grab | [Well Diagram] | Gravel & Debris | 58.6 | | | | |
| | 4'-6' | SS-1 | 0% | 3-2 | | | 142 | | | | |
| 10' | 6'-8' | SS-2 | | 5-4 | [Well Diagram] | No recovery (redrove 3" spoon) moist, olive, coarse to med. SAND, little gravel wet, black, fine SAND, trace silt; petroleum odor | 218 | | | | |
| | 8'-10' | SS-3 | 45% | 5-5 | | | 182 | | | | |
| | 10'-12' | SS-4 | 45% | 8-7 | | | 303 | | | | |
| 15' | 12'-14' | SS-5 | 40% | 5-8 | [Well Diagram] | saturated, olive fine SAND, trace medium sand, coarse sand; petroleum odor coarse to medium SAND, little gravel yellow petroleum product | 203 | | | | |
| | 14'-16' | SS-6 | 25% | 3-7 | | | 103 | | | | |
| | 16'-18' | SS-7 | 50% | 4-4 | | | 110 | | | | |
| 20' | 18'-20' | SS-8 | 45% | 2-2 | [Well Diagram] | 17.5' olive, fine SAND and SILT with dark yellow petroleum; black bedding plane A: black fine SAND, trace silt, oily | 91.7 | | | | |
| | | | 100% | 2-2 | | | 18.5' B: olive SILT, trace fine sand, organic matter | | | | |
| 25' | | | | | [Well Diagram] | Bottom of exploration at 20' 20' to 15' bentonite plug 14' to 4' 0.020"-slot 2" EFG screen 15' to 3' filter pack 3' to 2' bentonite seal 4' to +2.5' solid EFG riser Standpipe | | | | | |
| 30' | | | | | | | | | | | |
| GENERAL REMARKS: | | | | | | | | | | | |

EOIPROV0003877

| RESOURCE CONTROLS | | | | | | TEST BORING LOG | | |
|--|--------------------------------|---|----------------|--------------------|-----------|---|--|-------------------------------------|
| PROJECT: Providence Gas Company PROJECT NO.: A2000 048 LOCATION: 642 Aliens Avenue, Providence, R.I. DRILLING CO.: American Drilling, Inc. DRILLED BY: Rick Leger INSPECTED BY: Daniel Lanier | | | | | | BORING NO. RCA-21R1 PAGE 1 OF 1 DATE STARTED: 10/18/95 DATE FINISHED: 10/18/95 SURFACE ELEVATION: | | |
| GROUNDWATER OBSERVATIONS | | | | | | | | |
| DEPTH | | STABILIZATION TIME | | | | CASING SAMPLER | | |
| | | N/A | | | | TYPE: SIZE I.D.: HAMMER WT.: HAMMER FALL: | | |
| | | Split Spoon 1-3/8" x 24" 140 lbs. 30 in. | | | | | | |
| DEPTH (FT.) | SAMPLING DEPTH (FT.) FROM - TO | SAMPLE DATA | | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) | FIELD TEST DATA PID - 10.2 eV (ppm) |
| | | ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | |
| 5' | 2' | S-1 | | Grab | | 10.5 | Gravel dry, tan, med. SAND, little coarse sand (fill) dry, coarse FILL with brick, ash, gravel SAME, moist (brick plug) poor recovery, wet (brick plug) SAME, saturated, brick plug saturated, black, medium SAND steel plates (2) in basket of spoon refusal at 10.5' NO WELL INSTALLED RCA-21 relocated 10/30/95, to north | |
| | 2'-4' | SS-1 | | 4-5 | | | | |
| | | | 60% | 7-7 | | | | |
| | 4'-6' | SS-2 | | 8-7 | | | | |
| 10' | | | 25% | 5-4 | | | | |
| | 6'-8' | SS-3 | | 3-3 | | | | |
| | | | 0% | 2-3 | | | | |
| | 8'-10' | SS-4 | | 6-3 | | | | |
| 15' | 10'-12' | SS-5 | <10% | 9-50/0 | | | | |
| | | | | | | | | |
| 20' | | | | | | | | |
| 25' | | | | | | | | |
| 30' | | | | | | | | |
| GENERAL REMARKS: | | | | | | | | |

EOIPROV0003876

LN6

| DEPTH (FT.) | | SAMPLING DEPTH (FT.) FROM - TO | | SAMPLE DATA | | WELL DATA | STRATA CHANGE (FT.) | LITHOLOGY (DESCRIPTION OF MATERIALS) | FIELD TEST DATA PD - 10.2 eV (ppm) |
|-------------|----------------|--------------------------------|------|-------------|--|-----------|--|--------------------------------------|------------------------------------|
| ID | PERCENT RECOV. | BLOWS PER 6 INCHES | | | | | | | |
| 5' | 4'-6' | SS-1 | 60% | 2-3-3-2 | | | 0.0'-0.8' Dry, brown, SANDY fill 0.8'-3.0' Dark, gray, SAND/GRAVEL fill | 58.1 | |
| 10' | 6'-8' | SS-2 | 20% | 2-2-3-2 | | | Moist, black, SAND fill with slag and trace brick Saturated, black, SLAG, little sand | 133.0 | |
| | 8'-10' | SS-3 | 20% | 3-5-6-7 | | | Same as SS-2 with dark yellow petroleum | 174.0 | |
| 15' | 10'-12' | SS-4 | 15% | 2-1-1-1 | | | Black slag and sand, trace brick, petroleum odor | 179.0 | |
| | 12'-14' | SS-5 | - | 1-3-3-3 | | 15' | No recovery | 190.0 | |
| | 14'-16' | SS-6 | 0.6 | 2-2-2-3 | | | Black, coarse, sand and slag Black, coarse-medium, SILTY SAND, trace shells, lenses of | 98.4 | |
| 20' | 16'-18' | SS-7 | 0.85 | 4-7-9-9 | | | Same as SS-6 with asphaltic odor | 102 | |
| | 18'-20' | SS-8 | 0.8 | 5-8-9-13 | | | Same as SS-7 | | |
| 25' | | | | | | | Bottom of exploration at 20' | | |
| 30' | | | | | | | Well Construction: 2" diameter SCH 80 High Density Polyethylene (HDP) 0.020" Slot Screen Screen - 14'-4' # 1 Sand Pack - 14'-3' Bentonite - 3'-2" # 1 Sand Pack - 1'-0.5' HDPE riser - 4'-2" Bentonite plug - 18'-14' Concrete to grade | | |
| 35' | | | | | | | | | |
| 40' | | | | | | | | | |

GENERAL REMARKS:

EOIPROV0003902

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: B35
Date: 2/22/00
Within 100' of Water: No
Instrument: Thermo Environmen.
Instruments, Inc., Model 580B OVM
Boring Depth: 14.0'
Depth to Water: 13.5'
Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 24/24 | 1435 | 0.0 | (0-4") asphalt. (4-24") F/M brown/orange sand with small/large rounded stones throughout; soft. |
| B | 2-4 | 48/48 | | 0.0 | (24-72") F/M loose brown silty sand; with small/M rounded stones. |
| C | 4-6 | | | 0.0 | |
| D | 6-8 | 48/48 | | 0.0 | (72-80") F/M brown silty sand; dense. (80-88") red brick with M brown sand. (88-98") M/C black cinder ash; cinder ash stone and porous cinders (black and red). (98-120") F brown silty sand; SO red brick and small rounded stones. |
| E | 8-10 | | 1445 | 0.0 | |
| F | 10-12 | 30/48 | | 0.0 | |
| G | 12-14 | 30/48 | | 0.0 | (136-140") C black cinder ash with brick. (140-168") F/M brown silty sand with coal bits from 140-146"; small/M rounded stones from 140-150"; wet at 164". |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | N/A | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in.. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



2 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002

Driller.: Environmental Drilling, Inc.

Well Diameter: N/A

Drilling Method: Geoprobe

Sample Method: 4' Acetate Sampler

Boring No.: B36

Date: 2/22/00

Within 100' of Water: No

Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM

Boring Depth: 10.0'

Depth to Water: 5.0'

Logged By: Nicole Murry

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|---|
| A | 0-2 | 24/24 | 1345 | 0.0 | (0-3") large gravel. (3-8") M light brown/yellow sand with small rounded stones. (8-24") F/M black/brown sand mixed with coal; brick; large jagged gravel and cinder ash (black) throughout interval. |
| B | 2-4 | 44/48 | | 0.0 | (28-32") dense brown and black M sand with large brick bits; large amount of cinder ash at 31". (32-38") concrete and white concrete powder with F light brown sand. (38-42") M brown sand; dense with large bits of red brick. (42-43") M orange sand. (43-45") large gray stone; solid. (45-50") M brown sand; dense with large bits of red brick. (50-60") poorly sorted M brown sand with large rounded stone; SO cinder ash (black) at 55". (60-72") F/M brown silty sand with SO small rounded stones; wet. |
| C | 4-6 | | 1355 | 0.0 | |
| D | 6-8 | 24/48 | | 0.0 | (96-120") F/M brown silty sand; wet. |
| E | 8-10 | | | 0.0 | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|--------------------|------------------------|-------------------|---------------------------------|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST BORING LOG



272 West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company
642 Allens Avenue, Providence, RI
ESS Job No: P151-002
Driller.: Environmental Drilling, Inc.
Well Diameter: N/A
Drilling Method: Geoprobe
Sample Method: 4' Acetate Sampler

Boring No.: B45
Date: 2/22/00
Within 100' of Water: No
Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Boring Depth: 6.0'
Depth to Water: 5.5'
Logged By: Darryl Issa

| Depth (intervals) | Sample Depth (feet) | Recovery/Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|----------------------------|-------------|-----------|--|
| A | 0-2 | 16/24 | 1025 | 0.0 | (10-14") gravel. (14-24") F/C brown sand with SO gravel; damp; no odor. |
| B | 2-4 | 43/48 | | 0.0 | (29-39") F/C light brown sand and LI large gravel; damp; no odor. (39-45") F dark brown sand with SO silt and SO gravel; damp; no odor. (45-72") F/M brown/dark brown sand with SO pulverized brick and SO gravel with a white, putty like substance; wet at 67"; no odor. |
| C | 4-6 | | 1100 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:

| PROPORTIONS USED | | ABBREVIATIONS | Well Construction | DEPTH INTERVALS | |
|------------------|--------|------------------------|-------------------|-----------------|-----------------|
| TRACE (TR) | 0-10% | F = FINE | N/A | A = 0-24 in. | G = 144-168 in. |
| LITTLE (LI) | 10-20% | M = MEDIUM | | B = 24-48 in. | H = 168-192 in. |
| SOME (SO) | 20-35% | C = COARSE | | C = 48-72 in. | I = 192-216 in. |
| AND | 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. | J = 216-240 in. |
| | | F/C = FINE TO COARSE | | E = 96-120 in. | K = 240-264 in. |
| | | M/C = MEDIUM TO COARSE | | F = 120-144 in. | L = 264-288 in. |

TEST BORING LOG



West Exchange Street, Suite 101

Providence, Rhode Island 02903
(401) 421-0398 Fax (401) 421-5731

| | |
|---|--|
| Site: Providence Gas Company 642 Allens Avenue, Providence, RI | Boring No.: B46 |
| ESS Job No: P151-002 | Date: 2/18/00 |
| Driller.: Environmental Drilling, Inc. | Within 100' of Water: No |
| Well Diameter: N/A | Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM |
| Drilling Method: Geoprobe | Boring Depth: 6.0' |
| Sample Method: 4' Acetate Sampler | Depth to Water: (see below) |
| | Logged By: Daryll Issa |

| Depth (intervals) | Sample Depth (feet) | Recovery/ Penetration (in.) | Sample Time | PID (ppm) | Materials Description (size, grade, color, moisture) |
|-------------------|---------------------|-----------------------------|-------------|-----------|--|
| A | 0-2 | 22/24 | 1300 | 0.0 | (2-6") F/C light brown sand; wet; no odor. (6-10") F/C brown sand with SO gravel; wet; no odor. (23-24") F brown sand with SO gravel; wet; no odor. |
| B | 2-4 | 23/48 | | 0.0 | (49-57") F/C light brown sand with LI gravel; wet; no odor. (57-64") F/M brown sand with SO gravel; wet; no odor. (64-72") pulverized red brick with SO F/M brown sand and TR gravel; wet; no odor |
| C | 4-6 | | 1315 | 0.0 | |
| D | 6-8 | | | | |
| E | 8-10 | | | | |
| F | 10-12 | | | | |
| G | 12-14 | | | | |

Comments:
Due to snow and rain, unable to determine water table.

| PROPORTIONS USED | ABBREVIATIONS | Well Construction | DEPTH INTERVALS |
|-------------------------------|------------------------|-------------------|--|
| TRACE (TR) 0-10% | F = FINE | N/A | A = 0-24 in. G = 144-168 in. |
| LITTLE (LI) 10-20% | M = MEDIUM | | B = 24-48 in. H = 168-192 in. |
| SOME (SO) 20-35% | C = COARSE | | C = 48-72 in. I = 192-216 in. |
| AND 35-50% | F/M = FINE TO MEDIUM | | D = 72-96 in. J = 216-240 in. |
| | F/C = FINE TO COARSE | | E = 96-120 in.. K = 240-264 in. |
| | M/C = MEDIUM TO COARSE | | F = 120-144 in. L = 264-288 in. |

TEST PIT FIELD LOG

| | | |
|---|---|--|
| GZA GEOENVIRONMENTAL, INC. 530 BROADWAY, PROVIDENCE, RI GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS | PROJECT CLIENT: National Grid LOCATION: 642 Allens Avenue Providence, Rhode Island | TEST PIT NO.: TP-301 FILE NO.: 33554 DATE: 6/17/14 |
|---|---|--|

| | | |
|---|---|--|
| EXCAVATION EQUIPMENT | | |
| GZA ENGINEER: Sophia Narkiewicz WEATHER: Sunny 70s | CONTRACTOR: Clean Harbors OPERATOR: Victor Delgado MAKE: CAT CAPACITY: ICY | DATUM: N/A GROUND ELEV.: NM TIME STARTED: 0800 TIME COMPLETED: 1600 |

| DEPTH | PPM | EXCAV. EFFORT | BOULDER COUNT QTY. CLASS | REMARK NO. |
|---------------|-----|---------------|--------------------------|------------|
| 0.0.5' | 0 | | | |
| -1- 0.5'-1' | 0 | E | -- | |
| -2- 1.5'-5.5' | 0 | E | -- | 1 |
| -3- | | E | -- | |
| -4- | | | | |
| -5- | | | | |
| -6- 5.5'-13' | 195 | E | -- | 2 3 |
| -7- | | | | |
| -8- | | | | |
| -9- | | | | |
| -10- | | | | |
| -11- | ▽ | | | |
| -12- | | | | |
| -13- 13' + | NM | E | -- | 4 5 |
| -14- | | | | 6 |

REMARKS:

- 1 Poly layer observed at 1.5 feet bgs and 5.5 feet bgs
- 2 Pile/wood observed at 7 feet bgs and 10 feet bgs.
- 3 PID reading around hole around 6 ppm.
- 4 Water observed at 11 feet bgs.
- 5 LNAPL seeping in from the south at the water table.
- 6 Recovery well (12" diameter) set at 13.25 feet bgs-screened from 8 to 13 feet bgs.

N/A=Not Applicable
 NM=Not Measured

| | | | |
|------------------------|--|--|---|
| TEST PIT PLAN | LEGEND: BOULDER COUNT SIZE RANGE LETTER CLASSIFICATION DESIGNATION 6"-18" A 18"-36" B 36" OR LARGER C | PROPORTIONS USED TRACE (TR) 0-10% LITTLE (LI) 10-20% SOME (SO) 20-35% AND 35-50% | EXCAVATION EFFORT E EASY M MODERATE D DIFFICULT |
| NORTH VOLUME= 50 CY | OBSERVED GROUNDWATER LEVEL | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

DATE _____

HOLE NO. B-21

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.00

TO Prov. Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Prop. Tank LOCATION PROVIDENCE, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| | | | | |
|--|---|--|-----------------------------|---|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>14</u> Hours Casing - <u>90'</u> At _____ after _____ Hours | Rods - " <u>AW</u> " Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>7/27/71</u> a.m. COMPLETE <u>7/28/71</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>A. D'Atello</u> INSPECTOR _____ SOILS ENGR. <u>D. Andrews</u> |
|--|---|--|-----------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--|---|------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Res. | | |
| 10 | 4 | 0'-2' | D | 6 | 7 | 7 | Moist medium dense | 10' | Brown fine SAND & fine gravel, trace cinders FILL | 1 | 24" | 12" | | |
| | 6 | | | 6 | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | |
| | 6 | 5'-7' | D | 7 | 9 | 6 | " | | 15' | Brown-gray fine SAND & fine gravel, trace brick FILL (fuel odor noted) | 2 | 24" | 7" | |
| | 8 | | | 8 | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 20 | 7 | 10'-12' | D | 8 | 8 | 5 | | Wet medium dense | 15' | Brown gray fine SAND & fine gravel (fuel odor noted) FILL | 3 | 24" | 15" |
| | | 8 | | | 7 | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 1 | | 15'-17' | D | 1 | 2 | 2 | Wet medium stiff | 31'6" | Gray ORGANIC SILT, trace shells & fine sand | | 4 | 24" | 12" | |
| 2 | | | | 3 | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | |
| 30 | | 2 | | | | | | | | | | | | |
| | 3 | 20'-22' | D | 1 | 2 | 1 | Wet soft | 31'6" | Gray ORGANIC SILT, some fine to medium sand | 5 | 24" | 12" | | |
| | 4 | | | 2 | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 6 | 25'-27' | D | 1 | 1 | 2 | " | | 34' | Gray fine to medium SAND, some fine gravel & org.silt | 6 | 24" | 12" | |
| | 7 | | | 1 | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 40 | 9 | 30'-32' | D | 2 | 3 | 7 | | Wet V-stiff | 38' | Gray medium to coarse running SAND | 7 | 24" | 12" |
| 13 | | | | 16 | | | Moist M.dense | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 36 | | 35'-37' | D | 8 | 15 | 15 | Wet medium dense | 38' | Gr-Br. fine to coarse SAND some fine gravel, trace silt | | 8 | 24" | 12" | |
| 21 | | | | 14 | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |

GROUND SURFACE TO 90' USED 2 1/2" CASING: THEN sampled

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50 + Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 95'6"
 Rock Coring _____
 Samples 18

HOLE NO. B-21

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-21

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS Same as #1
 LOCATION _____
 PROJ. NO. _____
 OUR JOB NO. _____

| | | |
|---|--|--|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>Same as #1</u> CORE BAR _____ Type _____ Size I. D. _____ Hammer Wt. _____ Hammer Fall _____ | Date _____ Time _____ START <u>Same as #1</u> a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|--|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|-------|------------------|------------------------------|--|---|--------|----------------------------|-----|-----|----|--|
| | | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen | Rec | | | |
| 50 | 20 | 40'-42' | D | 11 | 13 | 12 | Wet dense | 44' | Gray-brown fine to coarse SAND, some fine gravel, trace silt | 9 | 24" | 12 | | | |
| | 21 | | | 10 | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | |
| | 14 | 45'-47' | D | 9 | 10 | 12 | Wet M. dense | | | 64' | Running SAND (lost sample) | | 24" | 11 | |
| | 36 | | | 14 | | | | | | | | | | | |
| | 51 | | | | | | | | | | | | | | |
| | 48 | | | | | | | | | | | | | | |
| | 49 | | | | | | | | | | | | | | |
| 38 | 50'-52' | D | 9 | 18 | 12 | " | 64' | Gray fine to coarse SAND, some fine gravel, trace silt | 10 | | | 24" | 12 | | |
| 28 | | | 11 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | | |
| 60 | | | | | | Wet very dense | | | | | | | | | |
| 36 | 55'-57' | D | 16 | 31 | 50 | | | | 64' | | 11 | 24" | 11 | | |
| 41 | | | 33 | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | | |
| 67 | | | | | | Wet medium dense | | | | | | | | | |
| 36 | 60'-62' | D | 7 | 12 | 14 | | 67' | Gray-brown running SAND | | | 12 | 24" | 12 | | |
| 33 | | | 15 | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | | |
| 39 | 65'-67' | D | 10 | 12 | 18 | Wet dense | | | | 73' | 13 | 24" | 11 | | |
| 45 | | | 18 | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | | |
| 48 | | | | | | Wet very dense | | | | | 73' | 14 | 24" | 12 | |
| 42 | 70'-72' | D | 10 | 20 | 18 | | 73' | Gray-medium to fine SAND & fine gravel, trace silt | | | | | | | |
| 60 | | | 27 | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | | |
| 47 | 75'-77' | D | 5 | 8 | 10 | Wet dense | | | | 73' | | 15 | 24" | 12 | |
| 38 | | | 15 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |

| | | | | |
|---|---|--|--|--|
| GROUND SURFACE TO _____ Sample Type _____ D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ "CASING: THEN _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. B-21 |
|---|---|--|--|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 of 3

DATE _____

HOLE NO. B-21

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-297

| | | | |
|--|---|---|--|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>Same as #1</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>Type <u>Same as #1</u></p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p>SAMPLER _____</p> <p>CORE BAR _____</p> <p>BIT _____</p> | <p style="text-align: right;">Date _____ Time _____</p> <p>START <u>Same as #1</u> a.m. p.m.</p> <p>COMPLETE _____</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--|-----|------|-----|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | | |
| 90 | 54 | 80'-82' | D | 6 | 14 | 22 | Wet dense | 82' | Gray medium to coarse SAND some fine gravel (running) | 16 | 24 | 12" | | |
| | 57 | | | 21 | | | | | | | | | | |
| | 78 | | | | | | | | | | | | | |
| | | 57 | 85'-87' | D | 8 | 10 | 15 | Wet dense | 89' | Gray fine SAND, little silt (running sand) | 17 | 24 | 12" | |
| | | 81 | | | 21 | | | | | | | | | |
| | | 92 | | | | | | | | | | | | |
| | | | 90'-92' | D | 9 | 16 | 24 | Wet very dense | 96'6" | Gray-brown fine to medium SAND, trace silt | 18 | 24 | 15" | |
| | | | | | 29 | | | | | | | | | |
| | | | 95'-96'6" | D** | 12 | 18 | 22 | Wet dense | | | | | | |
| | 100 | | | | | | | | Bottom of boring 96'6" | | | | | |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
|---|--|---|----------------------|----------------------|------------|--------------------|------------------|-------------|-------------|------------|----------------|---------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | | | | | | | | | | |
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <table border="0" style="width: 100%;"> <tr> <td>Cohesionless Density</td> <td>Cohesive Consistency</td> </tr> <tr> <td>0-10 Loose</td> <td>0-4 Soft 30 + Hard</td> </tr> <tr> <td>10-30 Med. Dense</td> <td>4-8 M/Stiff</td> </tr> <tr> <td>30-50 Dense</td> <td>8-15 Stiff</td> </tr> <tr> <td>50+ Very Dense</td> <td>15-30 V-Stiff</td> </tr> </table> | Cohesionless Density | Cohesive Consistency | 0-10 Loose | 0-4 Soft 30 + Hard | 10-30 Med. Dense | 4-8 M/Stiff | 30-50 Dense | 8-15 Stiff | 50+ Very Dense | 15-30 V-Stiff |
| Cohesionless Density | Cohesive Consistency | | | | | | | | | | | |
| 0-10 Loose | 0-4 Soft 30 + Hard | | | | | | | | | | | |
| 10-30 Med. Dense | 4-8 M/Stiff | | | | | | | | | | | |
| 30-50 Dense | 8-15 Stiff | | | | | | | | | | | |
| 50+ Very Dense | 15-30 V-Stiff | | | | | | | | | | | |
| | | <p>SUMMARY:</p> <p>Earth Boring _____</p> <p>Rock Coring _____</p> <p>Samples _____</p> | | | | | | | | | | |
| | | HOLE NO. B-21 | | | | | | | | | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE _____

HOLE NO. B-22

LINE & STA. _____

OFFSET _____

SURF. ELEV. 8.00

TO Providence Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | | RODS - "AW" | CASING | SAMPLER | CORE BAR | Date | |
|---------------------------|------------------|-------|------|------------------------|---------------|---------------|----------|------------------------------------|----------------------|
| At | after | Hours | Type | | | | | START | Time |
| At <u>9'2"</u> | after <u>1/2</u> | Hours | | Size: D. <u>2 1/2"</u> | <u>2 1/2"</u> | <u>S/S</u> | | START <u>7/26/71</u> | a.m. p.m. p.m. |
| casing - <u>65'</u> | | | | Hammer Wt. <u>300#</u> | <u>300#</u> | <u>1 3/8"</u> | | COMPLETE <u>7/27/71</u> | |
| At <u>9'</u> | after <u>3/4</u> | Hours | | Hammer Fall <u>24"</u> | <u>24"</u> | <u>30"</u> | BIT | TOTAL HRS. _____ | |
| Hole open | | | | | | | | BORING FOREMAN <u>A. D'Alfello</u> | |
| | | | | | | | | INSPECTOR _____ | |
| | | | | | | | | SOILS ENGR. <u>D. Andrews</u> | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|---|------|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen. | Rec. | |
| 10 | 1 | 0'-2' | D | 4 | 5 | 4 | Moist loose | 15'0" | Black COAL & ash - FILL | 1 | 24" | 17" | |
| | 3 | | | 2 | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 20 | 1 | 5'-7' | D | 3 | 3 | 2 | " | 18'0" | Brown fine SAND & coal FILL (fuel odor noted) | 2 | 24" | 9" | |
| | 2 | | | 3 | | | | | | | | | |
| | 12 | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| 30 | 1 | 10'-12' | D | 1 | 1 | 1 | Wet loose | 23' | Brown fine SAND & fine gravel FILL (fuel odor noted) | 3 | 24" | 11" | |
| | 1 | | | 3 | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| | 1 | 15'-17' | D | 1 | 2 | 2 | Wet medium stiff | | | | Black ORGANIC SILT, some fine sand, trace fine gravel | 4 | 24" |
| 40 | 1 | | | 3 | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 3 | 20'-22' | D | 2 | 2 | 3 | Wet soft | | Dark gray ORGANIC SILT & fine sand | 5 | 24" | 12" | |
| | 4 | | | 5 | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 40 | 18 | 25'-27' | D | 4 | 5 | 8 | Wet medium dense | | Gray medium to coarse SAND, some fine to medium gravel little organic silt | 6 | 24" | 12" | |
| | 17 | | | 12 | | | | | | | | | |
| | 21 | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | |
| | 12 | | | | | | Wet loose | | | | | | |
| 40 | 9 | 30'-32' | D | 6 | 4 | 3 | Wet loose | 31' | | 7 | 24" | 10" | |
| | 11 | | | 4 | | | | | | | | | |
| | 12 | | | | | | | | | | | | |
| | 13 | | | | | | Wet medium stiff | | Dark gray ORGANIC SILT, trace shells | 8 | 24" | 12" | |
| | 13 | 35'-37' | D | 1 | 2 | 2 | | | | | | | |

GROUND SURFACE TO 70' USED 2 1/2" CASING: THEN S/S to 72'

| | | | |
|--|---|--|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
|--|---|--|---|

SUMMARY:
 Earth Boring 72'
 Rock Coring _____
 Samples 15

HOLE NO. B-22

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. B-22
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>Same as #1</u> CORE BAR _____ Type _____ Size I.D. _____ Hammer Wt. _____ BIT _____ Hammer Fall _____ | Date <u>Same as #1</u> Time _____ START _____ COMPLETE _____ TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|------------------|------------------------------|---|---|--------|-----|-----|----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| | | | | | | | | | | | | | |
| 50 | 26 | 40'-42' | D | 2 | 3 | 3 | Wet | 42' | Dark gray ORGANIC SILT trace shells | 9 | 24" | 12 | |
| | 25 | | | 20 | | | V-stiff | | | | | | |
| | 34 | | | | | | | | | | | | |
| | 47 | | | | | | | | | | | | |
| | 34 | | | | | | Wet dense | 49' | Brown medium to fine SAND | | | | |
| | 57 | 45'-47' | D | 16 | 15 | 12 | | | | | 10 | 24" | 13 |
| | 29 | | | 15 | | | | | | | | | |
| | 28 | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | |
| | 39 | | | | | | Wet medium dense | 59' | Brown fine to coarse SAND, some fine to medium gravel & silt | | | | |
| 21 | 50'-52' | D | 18 | 17 | 15 | | | | | 11 | 24" | 13 | |
| 32 | | | 14 | | | | | | | | | | |
| 39 | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | |
| 48 | | | | | | Wet medium dense | 59' | Brown fine to coarse SAND, some fine to medium gravel little silt | | | | | |
| 40 | 55'-57' | D | 7 | 12 | 13 | | | | | 12 | 24" | 11 | |
| 34 | | | 14 | | | | | | | | | | |
| 49 | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | |
| 60 | 47 | | | | | | Wet very dense | 63' | Gray-brown fine to coarse SAND; some medium to fine gravel & silt | | | | |
| | 56 | 60'-62' | D | 19 | 28 | 30 | | | | | 13 | 24" | 10 |
| | 64 | | | 24 | | | | | | | | | |
| | 43 | | | | | | | | | | | | |
| | 39 | | | | | | Wet dense | 67' | Brown medium to coarse running SAND, little fine gravel | | | | |
| | 48 | | | | | | | | | | | | |
| 39 | 65'-67' | D | 11 | 22 | 24 | | | | | 14 | 24" | 10 | |
| 49 | | | 22 | | | | | | | | | | |
| 52 | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | |
| 70 | 71 | | | | | | | 69' | Dk. gray F-H SAND, some silt & fine gravel | | | | |
| | | 70'-72' | D | 11 | 17 | 20 | " | 72' | Gray-brown fine to coarse SAND, little silt, trace fine gravel | 15 | 24" | 11 | |
| | | | | 20 | | | | | Bottom of boring 72' | | | | |
| 75 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

GROUND SURFACE TO 70' USED 2 1/2 "CASING: THEN S/S to 72'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall


Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense


Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff


SUMMARY:
 Earth Boring 72
 Rock Boring _____
 Samples 15

HOLE NO. B-22

| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | | BORING NO. SB-02 Page No. 1 of 2 | | |
|--|---------------------|------------|-----------|---|----------------------|------------------------|------------------|--|--------------------|--|
| Client | Kiewit | | | GS Elev. | N/A ft. | | # of SPT Samples | 14 | | |
| Contractor | Geologic | | | Boring Coordinates | | N/A | | Length of Rock core | - ft | |
| Driller | Dave | | | | | | | | | |
| WAI Rep. | Shawn Ingram (Roux) | | | EQUIPMENT | CASING | SAMPLER | CORE | Total Depth of Boring | 71 ft. | |
| DATE | Start | Finish | Type | | Split Spoon | | | | | |
| | 6/2/2015 | 6/2/2015 | Size I.D. | 4" | 2" | | | # of Shelby Tubes | 0 | |
| Boring Location | See attached plan | | | Hammer Wt. | Hyd. | Hyd. | | | | |
| | Hammer Fall | | | | | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description | | |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | | | |
| 5 | SS-1 | 6-8 | 24 | 9 | 9/6/6/4 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. | | |
| 10 | SS-2 | 9-11 | 24 | 4 | 3/3/3/4 | | | NARROWLY GRADED GRAVEL (GP); mostly fine subangular gravel; <5% fines; brown and gray. | | |
| 15 | SS-3 | 14-16 | 24 | 5 | 2/woh/1/1 | | | NARROWLY GRADED GRAVEL WITH SAND (GP); ~60% fine subangular gravel; ~40% fine to coarse, subrounded sand; gray; petroleum odor. | | |
| 20 | SS-4 | 19-21 | 24 | 7 | 12/6/6/3 | | | WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% fine to medium sand; ~30% fine subangular gravel; ~10% fines; dark gray. | | |
| 25 | SS-5 | 24-26 | 24 | 8 | 12/6/6/3 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to medium sand; ~25% fine subangular gravel; <5% fines; dark gray. | | |
| 30 | SS-6 | 29-31 | 24 | 10 | 5/3/3/3 | | | WIDELY GRADED SAND (SW); Mostly fine to medium sand; <5% fines and fine subangular fine gravel; gray. | | |
| 35 | SS-7 | 34-36 | 24 | 18 | 3/1/woh/9 | | ORGANIC SILT | WIDELY GRADED SAND (SW) and SILT WITH SAND (ML); Mostly fine to medium sand; <5% fines; A stratified layer (4 inches) organic silt; dark gray. | | |
| 40 | SS-8 | 39-41 | 24 | 12 | 13/9/23/17 | | SAND | WIDELY GRADED SAND WITH GRAVEL; ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; >5% fines; brown. | | |
| Notes: | | | | | | PROJECT Providence LNG | | | Borehole No. SB-02 | |

| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|-------|--------------------|------------|----------|-------------|------------------------|--------|--|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 45 | SS-9 | 44-46 | 24 | 10 | 9/7/7/7 | | SAND | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 50 | SS-10 | 49-51 | 24 | 10 | 6/6/8/7 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light gray and light brown. |
| 55 | SS-11 | 54-56 | 24 | 8 | 8/7/8/7 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light gray and light brown. |
| 60 | SS-12 | 59-61 | 24 | 12 | 3/3/7/7 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; dark brown. |
| 65 | SS-13 | 64-66 | 24 | 12 | 13/16/17/16 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 70 | SS-14 | 69-71 | 24 | 12 | 12/15/18/18 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 75 | | | | | | | | Bottom of Boring, 71 feet |
| 80 | | | | | | | | |
| 85 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-02 |

| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | | BORING NO. SB-04 Page No. 1 of 2 | |
|--|---------------------|------------|----------|---|----------------------|-------------|------------------|--|--------|
| Client | Kiewit | | | GS Elev. | N/A ft. | | # of SPT Samples | 10 | |
| Contractor | Geologic | | | Boring Coordinates | | N/A | | Length of Rock core | - ft |
| Driller | Dave | | | EQUIPMENT | CASING | SAMPLER | CORE | Total Depth of Boring | 51 ft. |
| WAI Rep. | Shawn Ingram (Roux) | | | Type | | Split Spoon | | # of Shelby Tubes | 2 |
| DATE | Start | Finish | | Size I.D. | 4" | 2" | | | |
| | 6/1/2015 | 6/1/2015 | | Hammer Wt. | Hyd. | Hyd. | | | |
| Boring Location | See attached plan | | | Hammer Fall | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description | |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | | |
| 5 | SS-1 | 6-8 | 24 | 5 | 7/4/4/3 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; gray. | |
| 10 | SS-2 | 9-11 | 24 | 5 | 8/6/5/4 | | | WIDELY GRADED SAND WITH SILT (SW-SM); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; gray; petroleum odor. | |
| 15 | SS-3 | 14-16 | 24 | 10 | 7/4/3/3 | | | SILT WITH GRAVEL (ML); medium plasticity organic silt; >5% fine subangular gravel; dark gray. | |
| 20 | SS-4 | 19-21 | 24 | 11 | 3/1/2/1 | | | WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray. Shelby tube undisturbed sample. | |
| 25 | US-1 | 21-23 | 30 | 24 | Push | | | | |
| 25 | SS-5 | 24-26 | 24 | 17 | woh(12")/2/1 | | ORGANIC SILT | WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray. | |
| 30 | SS-6 | 29-31 | 24 | 18 | 8/6/5/4 | | | WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray. Shelby tube undisturbed sample. | |
| 30 | US-2 | 31-33 | 30 | 22 | Push | | | | |
| 35 | SS-7 | 34-36 | 24 | 24 | 6/6/5/4 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium sand; ~20% fine subangular fine gravel; gray. | |
| 40 | SS-8 | 39-41 | 24 | 24 | 1/2/3/9 | | | SILT WITH SAND (ML); ~85% medium plasticity organic silt; ~15% fine sand; dark gray. | |
| Notes: | | | | PROJECT Providence LNG | | | | Borehole No. SB-04 | |

| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | Project Providence LNG Location Providence, RI Project No. 21524028 | BORING NO. SB-04 Page No. 2 of 2 | | | | | |
|--|--------------------|---|-------------------------------------|----------|----------------------|------------------------|--------|--|
| Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | |
| 45 | SS-9 | 44-46 | 24 | 14 | 24/18/16/14 | | SAND | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; brown and gray. |
| 50 | SS-10 | 49-51 | 24 | 8 | 23/12/13/13 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; brown and gray. |
| 55 | | | | | | | | Bottom of Boring, 51 feet |
| 60 | | | | | | | | |
| 65 | | | | | | | | |
| 70 | | | | | | | | |
| 75 | | | | | | | | |
| 80 | | | | | | | | |
| 85 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-04 |

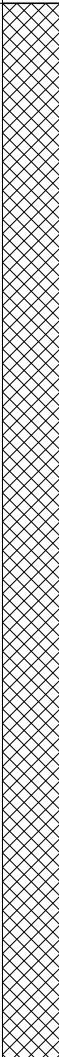

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area




DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 1 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--|---|--------|---|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | 10 | 0.0 - 19.0ft Dark grayish brown, fine to coarse SAND to silty fine to medium SAND, trace to little gravel (FILL). | SP |  | 0.0 | S1 | SS | 10-10-25-21 | 35 | 1.1 2.0 | Top 2": Gray, damp, dense, coarse GRAVEL, some fine sand, (GP). Middle 5": Brown, moist, dense, silty fine to medium SAND, trace asphalt, trace gravel, (SM). Bottom 6": Dark brown, moist, dense, fine to coarse SAND, trace asphalt, trace gravel, (SP) PID=0.1ppm |
| 5.0 | 5 | | | | 5.0 | S2 | SS | 30-23-23-23 | 46 | 1.0 2.0 | Dark grayish brown, moist, dense, medium to coarse SAND, some gravel, trace concrete (up to 1"), (SP). PID=0.5ppm |
| 10.0 | 0 | | | | 9.0 | S3 | SS | 41-21-13-9 | 34 | 0.7 2.0 | Dark grayish brown, wet, dense, fine to coarse SAND, little gravel, (SW). Slight hydrocarbon odor. PID=2.3ppm |
| 15.0 | -5 | | | | 14.0 | S4 | SS | 18-13-13-13 | 26 | 0.9 2.0 | Dark gray, wet medium dense, silty fine to medium SAND, little gravel, (SM). Slight hydrocarbon odor. PID=32.5ppm |
| 20.0 | -10 | | | | 19.0 - 69.0ft Dark brown to dark gray, organic SILT to fine to medium sandy CLAY, trace shells and wood fragments. | OH |  | 19.0 | S5 | SS | 1-1-1-1 |
| | | 21.0 | S6 | VANE | | | | 1-1-1-1 | 2 | 2.0 2.0 | Dark brown, wet, soft, fine to medium sandy CLAY, trace shell fragments, (CH). Tv=250, 200, 200psf Pp=1500, 1000, 1200psf V1: (21.5-22) Su = 550 psf; Remolded Su = 200 psf V2: (22.5-23) Su = 583 psf; Remolded Su = 416 psf |
| 25.0 | | 23.0 | S7 | SS | | | | 1-1-1-2 | 2 | 2.0 2.0 | Dark brown, wet, soft, fine to medium sandy CLAY, (CH). Tv=250, 200, 200psf Pp=1500, 1700, 2000psf |

Log continued on next page

-  Fill (made ground)
-  USCS High Plasticity Organic silt or clay with shells (OHSH)
-  USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 2 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|---|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | -15 | | | OH | | | | | | | |
| 30.0 | -20 | | | | 29.0 | S8 | SS | WOH-2-5-7 | 7 | 2.0 2.0 | Top 14": Dark gray, wet, soft, organic SILT, trace fine sand, (OH). Bottom 10": Dark grayish brown, wet, loose, silty medium to coarse SAND, (SM). Tv=200, 250, 250psf Pp=2000, 1800, 1800psf |
| 35.0 | -25 | | | | 34.0 | S9 | SS | 1-2-1-2 | 3 | 2.0 2.0 | Top 8": Dark gray, wet, soft, organic SILT, trace wood fragments, trace fine sand, trace shell fragments, (OH). Tv=600, 550, 350psf Pp=2500, 2000, 2250psf Bottom 16": Dark gray, wet, soft, sandy SILT, trace wood fragments, trace shell fragments, (ML). |
| 40.0 | -30 | | | | 39.0 | S10 | SS | 3-2-3-3 | 5 | 2.0 2.0 | Dark gray, moist, soft, SILT, trace shell fragments, (ML). Tv=350, 650, 300psf Pp=2000, 1700, 2000psf |
| 45.0 | -35 | | | | 41.0 | S11 | VANE | 4-2-3-3 | 5 | 1.5 2.0 | Dark gray, moist, soft, clayey SILT, trace fine sand, trace shell fragments, (MH). Tv=300, 360, 200psf Pp=1000, 1000, 1000psf PID=0.6ppm V3: (41.5-42) Su = 350 psf; Remolded Su = 183 psf V4: (42.5-43) Su = 200 psf; Remolded Su = 50 psf |
| 50.0 | | | | | 49.0 | S12 | SS | 4-3-3-3 | 6 | 2.0 2.0 | Dark gray, moist, soft, organic SILT, trace wood, trace shell fragments, (OH). Tv=480, 400, 450psf, Pp=2500, 2600, 3000psf PID=0.6ppm |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHSH)
- USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 3 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|-------------|-------------------|---|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 50.0 | -40 | | | OH | | S12 | SS | 4-3-3-3 | 6 | $\frac{2.0}{2.0}$ | | |
| 55.0 | -45 | | | | 54.0 | S13 | SS | 2-2-2-3 | 4 | $\frac{2.0}{2.0}$ | Dark gray, moist, soft, organic SILT, trace wood fragments, trace shell fragments, (OH). Tv=350, 300, 400psf Pp=2500, 2500, 2500psf | |
| | | | | | 56.0 | S14 | VANE | WOP-WOP-WOP-WOP | 0 | $\frac{1.5}{2.0}$ | Dark gray, moist, very soft, organic SILT, trace wood fragments, trace roots, trace shell fragments, (OH). Tv=100, 250, 200psf Pp=2000, 1500, 1000psf V5: (56.5-57) Su = 1801 psf; Remolded Su = 995 psf V6: (57.5-58) Su = 2844 psf; Remolded Su = 1801 psf | |
| 60.0 | -50 | | | | 59.0 | S15 | SS | 2-3-4-6 | 7 | $\frac{2.0}{2.0}$ | Dark gray, moist, medium stiff, organic SILT, trace wood fragments, trace roots, trace fine sand, (OH). Tv=240, 320, 300psf Pp=2000, 3200, 3500psf | |
| 65.0 | -55 | | | | 64.0 | S16 | SS | 7-9-9-9 | 18 | $\frac{1.7}{2.0}$ | Top 5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace roots, trace fine sand, (OH). Tv=250, 200, 200psf Pp=2500, 2000, 2000psf Middle 10.5": Dark gray, wet, loose, silty fine to coarse SAND, (SM). Bottom 3.5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace fine sand, (OH). Pp=3000, 2500, 3500psf | |
| 70.0 | -60 | 69.0 - 81.0ft Dark gray, fine to coarse SAND to silty fine to medium SAND, trace gravel (outwash). | | | SP | 69.0 | S17 | SS | 13-18-17-14 | 35 | $\frac{0.7}{2.0}$ | Dark gray, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SP). |
| 75.0 | | | | | | 74.0 | | SS | 14-17-14-12 | 31 | $\frac{0.0}{2.0}$ | NO RECOVERY. Piece of gravel in tip. |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 4 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|------------------|--------------------|--------|-------------|----------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | -65 | | | [Dotted Pattern] | | | SS | 14-17-14-12 | 31 | 0.0 2.0 | |
| 80.0 | | | SP | | 79.0 | S18 | SS | 15-12-11-8 | 23 | 1.5 2.0 | Dark gray, wet, medium dense, silty fine to medium SAND, trace gravel, (SM). |

Boring completed at 81.0 ft

- Notes:**
 1. Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

| | | |
|--------------------|---|------------------------------|
| Fill (made ground) | USCS High Plasticity Organic silt or clay with shells (OHS) | USCS Poorly-graded Sand (SP) |
|--------------------|---|------------------------------|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



TABLE W-1 - SOIL TPH FINGERPRINTING RESULTS

File No. 03.0033554.01

RCA-21 LNAPL DATA GAP

1/5/2024

642 Allens Ave
 Providence, Rhode Island

| | Units | RCA-21 | RCA-21 | RCA-40 |
|------------------------------|-------|------------|-------------|-------------|
| | | 4-6 ft bgs | 8-10 ft bgs | 8-10 ft bgs |
| | | 1996 | 1996 | 1996 |
| Total Petroleum Hydrocarbons | | | | |
| Hydrocarbon Content | mg/kg | 4,520 | 1,170 | 41,000 |

Notes:

1. The characteristics of the chromatogram for soil sample RCA-21 4-6 ft bgs and RCA-40 8-10 ft bgs indicate "Fuel Oil No.2".
2. The characteristics of the chromatogram for soil sample RCA-21 8-10 ft bgs indicate "Fuel Oil mixed with Coal Tar".

**TABLE W-2 - GROUNDWATER AND NAPL GAUGING
RCA-21 LNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 2011 | | | | | | | August 2011 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | 10.07 | 13.65 | - | 13.75 | 0.07 | 3.58 | NP | 3.11 | 10.72 | 13.66 | - | 13.75 | 0.06 | 2.94 | NP | 2.56 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | - | 10.01 | - | 16.75 | 2.23 | NP | NP | 2.23 | - | 10.37 | - | 16.75 | 1.87 | NP | NP | 1.87 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | 10.92 | 10.94 | - | 12.35 | 2.14 | 0.02 | NP | 2.16 | 11.27 | 11.3 | - | 12.35 | 1.78 | 0.03 | NP | 1.81 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 11.6 | - | 13.8 | 2.72 | NP | NP | 2.72 | - | 11.9 | - | 13.8 | 2.42 | NP | NP | 2.42 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | | | | | | | | | | | | | | | | |

Notes

Elevations are relative to City of Providence Datum

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE W-2 - GROUNDWATER AND NAPL GAUGING
RCA-21 LNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | February 2012 | | | | | | | July 2012 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | 10.95 | 13.74 | - | 13.94 | -0.02 | 2.79 | NP | 2.35 | 11.17 | 12.82 | - | 14.35 | 0.90 | 1.65 | NP | 2.30 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | trace | 10.78 | - | 16.9 | 1.46 | trace | NP | 1.46 | trace | 10.47 | - | 16.8 | 1.77 | trace | NP | 1.77 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | 11.67 | 11.68 | - | 12.45 | 1.40 | 0.01 | NP | 1.41 | trace | 11.4 | - | 12.4 | 1.68 | trace | NP | 1.68 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 12.3 | - | 13.8 | 2.02 | NP | NP | 2.02 | - | 12.08 | - | 13.8 | 2.24 | NP | NP | 2.24 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | | | | | | | | | | | | | | | | |

Notes

Elevations are relative to City of Providence Datum

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE W-2 - GROUNDWATER AND NAPL GAUGING
RCA-21 LNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | February 2013 | | | | | | | November 2013 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | 11.41 | 12.85 | - | 14.35 | 0.87 | 1.44 | NP | 2.10 | 12.26 | 14.17 | - | 14.35 | -0.45 | 1.91 | NP | 1.17 |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | trace | 10.85 | - | 16.8 | 1.39 | trace | NP | 1.39 | - | 10.7 | - | 16.85 | 1.54 | NP | NP | 1.54 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | trace | 11.77 | - | 12.5 | 1.31 | trace | NP | 1.31 | 11.60 | 11.61 | - | 12.4 | 1.47 | 0.01 | NP | 1.48 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 12.4 | - | 13.8 | 1.92 | NP | NP | 1.92 | - | 12.25 | - | 13.7 | 2.07 | NP | NP | 2.07 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | | | | | | | | | | | | | | | | |

Notes

Elevations are relative to City of Providence Datum

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE W-2 - GROUNDWATER AND NAPL GAUGING
RCA-21 LNAPL DATA GAP**

File No. 03.0033554.01
1/5/2024

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2014 | | | | | | | July 2, 2014 | | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | 11.04 | 11.95 | - | 14.63 | 1.77 | 0.91 | NP | 2.54 | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | - | 10.4 | - | 16.92 | 1.84 | NP | NP | 1.84 | | | | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Trace | 11.33 | - | 12.56 | 1.75 | NP | NP | 1.75 | | | | | | | | | |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 12.59 | - | 14.5 | 1.73 | NP | NP | 1.73 | | | | | | | | | |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | | | | | | | | | 10.24 | 10.26 | - | 14 | 3.92 | 0.02 | NP | 3.94 | |

Notes
 Elevations are relative to City of Providence Datum
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE W-2 - GROUNDWATER AND NAPL GAUGING
RCA-21 LNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 23, 2014 | | | | | | | October 2014 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | | | | | | | | | | | | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | Trace | 11.51 | - | 12.56 | 1.57 | Trace | NP | 12.56 | Trace | 10.71 | - | 12.55 | 2.37 | Trace | NP | 2.37 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 10.68 | - | 17.35 | 3.64 | NP | NP | 3.64 | - | 12.8 | - | 14.4 | 1.52 | NP | NP | 1.52 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | Trace | 10.46 | - | 14.02 | 3.72 | Trace | NP | 3.72 | 10.67 | 10.68 | - | 14 | 3.50 | 0.01 | NP | 3.51 |

Notes
 Elevations are relative to City of Providence Datum
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE W-2 - GROUNDWATER AND NAPL GAUGING
RCA-21 LNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | April 2015 | | | | | | | October 2015 | | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | Well destroyed - replaced with RW-1 | | | | | | | | |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | 10.75 | 10.79 | - | 16.8 | 1.45 | 0.04 | NP | 1.48 | trace | 10.6 | - | 17.84 | 1.64 | trace | NP | 1.64 |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | trace | 11.62 | - | 12.4 | 1.46 | trace | NP | 1.46 | - | 11.35 | - | 12.44 | 1.73 | NP | NP | 1.73 |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | 12.82 | 12.83 | - | 14.1 | 1.49 | 0.01 | NP | 1.50 | - | 12.69 | - | 14.34 | 1.63 | NP | NP | 1.63 |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | trace | 9.64 | - | 13.9 | 4.54 | trace | NP | 4.54 | trace | 11.14 | - | 14.14 | 3.04 | trace | NP | 3.04 |

Notes

Elevations are relative to City of Providence Datum

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE W-2 - GROUNDWATER AND NAPL GAUGING
RCA-21 LNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | May 2016 | | | | | | | | October 2016 | | | | | | | |
|-----------|-----------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|-------------------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) |
| LNG | RCA-21 | NS | 13.72 | 10.48 | Standpipe | Shallow | 10/30/1995 | 11.39 | 4 - 14 | 0.91 - 3.58 | NP | Well destroyed - replaced with RW-1 | | | | | | | | Well destroyed - replaced with RW-1 | | | | | |
| LNG | RCA-40 | 12.76 | 12.24 | 10.47 | Standpipe | Shallow | 5/3/1996 | 15.15 | 4 - 14 | trace - 0.04 | NP | 10.69 | 10.71 | - | 16.8 | 1.53 | 0.02 | NP | 1.55 | Decommissioned June 2016 | | | | | |
| LNG | CHES RW-4 | 13.08 | 13.08 | 9.09 | Recovery Well | Shallow | 2002 | 8.57 | Unknown | trace - 0.03 | NP | - | 11.05 | - | 0.00 | 2.03 | NP | NP | 2.03 | Decommissioned June 2016 | | | | | |
| LNG | CHES RW-5 | 14.32 | 14.32 | 11.16 | Recovery Well | Shallow | 2002 | 11.34 | Unknown | 0.01 | NP | - | 12.77 | - | 14.1 | 1.55 | NP | NP | 1.55 | Decommissioned June 2016 | | | | | |
| LNG | RW-1 | 14.18 | 14.18 | 11.84 | Recovery Well | Shallow | 6/17/2014 | 11.66 | 8 - 13 | trace - 0.02 | NP | trace | 6.07 | - | 8.44 | NS | trace | NP | NS | Decommissioned June 2016 | | | | | |

Notes

Elevations are relative to City of Providence Datum
 NP - Indicates No Product observed.
 NS - Not Surveyed
 Blanks indicate no measurement collected on that particular day.
 Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE W-3 - HISTORIC LNAPL THICKNESSES
RCA-21 DNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Date | 11/12/01 | 09/12/02 | 10/08/02 | 10/22/02 | 11/15/02 | 12/07/02 | 12/24/02 | 01/08/03 | 02/11/03 | 02/28/03 | Sept 2003 | Sept 2005 | Mar 2006 | June 2006 | July 2006 | Oct. 2006 | Dec 2006 | Mar 2008 | |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|----------|-----------|-----------|-----------|----------|----------|--|
| LNAPL Thickness (feet) | | | | | | | | | | | | | | | | | | | |
| RCA-40 | 0.25 | 0.01 | NG | NG | NG | NG | NG | NG | NG | NG | trace | trace | 0.1 | 0.21 | 0.18 | 0.22 | 0.01 | 0.01 | |
| CHES RW-4 | NI | NI | 0.03 | 0.02 | 0.09 | 0.08 | 0.05 | 0.03 | 0.03 | 0.02 | NG | 2 | ND | 0.18 | 0.13 | 0.1 | 0.08 | 0.09 | |
| CHES RW-5 | NI | NI | 0.05 | 0.04 | 0.12 | 0.09 | 0.06 | 0.05 | 0.02 | 0.02 | NG | 0.5 | 0.1 | ND | ND | 0.01 | ND | trace | |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the CNG Fueling Station portion of the Property

NG - Not Gauged

RCA-21 was destroyed in late June 2014 and replaced with RW-1

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

**TABLE W-3 - HISTORIC LNAPL THICKNESSES
RCA-21 DNAPL DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Date | July 2011 | Aug 2011 | Feb 2012 | July 2012 | Feb 2013 | Nov 2013 | June 2014 | July 23, 2014 | October 2014 | April 2015 | October 2015 | May 2016 | October 2016 |
|------------------------|-----------|----------|----------|-----------|----------|----------|-----------|---------------|--------------|------------|--------------|----------|--------------|
| LNAPL Thickness (feet) | | | | | | | | | | | | | |
| RCA-40 | ND | ND | trace | trace | trace | ND | ND | NG | ND | 0.04 | trace | 0.02 | Decom |
| CHES RW-4 | 0.02 | 0.03 | 0.01 | trace | trace | 0.01 | ND | trace | trace | trace | ND | ND | Decom |
| CHES RW-5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.01 | ND | ND | Decom |

Notes:

Well is located in the Natural Gas Regulator portion of the Property

Well is located at the LNG Facility

Well is located in the CNG Fueling Station portion of the Property

NG - Not Gauged

RCA-21 was destroyed in late June 2014 and replaced with RW-1

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

NI - Not Installed Yet

Dest - Destroyed

trace - sheen or less than 0.01 feet

RCA-21 LNAPL DATA GAP

642 Allens Avenue
Providence, Rhode Island

| Well ID | Date | Gauging Time | Depth to LNAPL (feet) | Depth to Water (feet) | LNAPL Thickness (feet) | Estimated Volume Purged (gallons) | Tide Condition |
|-----------|----------------------------|----------------|-----------------------|-----------------------|------------------------|-----------------------------------|----------------|
| RCA-21 | 7/1/2011 | NR | 10.07 | 13.65 | 3.58 | NR | NR |
| | 8/3/2011 | NR | 10.72 | 13.66 | 2.94 | NR | NR |
| | 2/3/2012 | 13:00 | 10.95 | 13.74 | 2.79 | 2.25 gal | Mid |
| | 2/8/2012 | 14:30 | 10.93 | 13.28 | 2.35 | 2 gal | Low |
| | 2/15/2012 | 11:20 | 11.28 | 12.75 | 1.47 | 1.25 gal | Low |
| | 2/23/2012 | 13:13 | 11.56 | 12.60 | 1.04 | 0.75 gal | Low |
| | 3/2/2012 | 13:45 | 11.77 | 12.52 | 0.75 | 1 gal | High |
| | 3/9/2012 | 12:30 | 11.38 | 12.29 | 0.91 | 0.75 gal | Low to Mid |
| | 4/13/2012 | 9:43 | 11.88 | 13.45 | 1.57 | 1.5 gal | Low to Mid |
| | 5/16/2012 | 13:18 | 10.60 | 12.00 | 1.40 | 1 gal | Mid |
| | 6/29/2012 | 9:16 | 10.70 | 12.55 | 1.85 | 1 gal | Low |
| | 7/19/2012 | 9:21 | 11.17 | 12.82 | 1.65 | 1 gal | High |
| | 8/24/2012 | 9:45 | 10.62 | 12.25 | 1.63 | 1.5 gal | Mid |
| | 9/25/2012 | 13:24 | 10.85 | 12.33 | 1.48 | 2 gal | Mid |
| | 10/31/2012 | 9:35 | 10.71 | 12.60 | 1.89 | 1.5 gal | High |
| | 11/19/2012 | 13:45 | 10.87 | 12.55 | 1.68 | 0.75 gal | High to Mid |
| | 12/20/2012 | 12:00 | 11.40 | 12.76 | 1.36 | 1 gal | High |
| | 2/1/2013 | 11:30 | 11.41 | 12.85 | 1.44 | 1 gal | High |
| | 2/26/2013 | 12:20 | 10.45 | 12.35 | 1.90 | 1 gal | Low |
| | 3/25/2013 | 11:15 | 10.53 | 10.60 | 0.07 | NR | Mid |
| | 4/24/2013 | 10:30 | 11.09 | 12.43 | 1.34 | 1 gal | Mid |
| | 5/31/2013 | 10:00 | 11.65 | 12.75 | 1.10 | 0.75 gal | Mid to Low |
| | 6/25/2013 | 11:30 | 10.15 | 10.51 | 0.36 | 0.25 gal | Mid |
| | 7/31/2013 | 7:00 | 10.90 | 12.77 | 1.87 | 1.25 gal | Mid |
| | 8/28/2013 | 12:00 | 10.90 | 12.42 | 1.52 | 1.5 gal | Mid |
| | 9/27/2013 | 11:00 | 10.83 | 12.25 | 1.42 | 1 gal | Mid |
| | 10/30/2013 | 14:00 | 10.97 | 12.13 | 1.16 | 1 gal | Mid |
| | 11/19/2013 | 10:30 | 12.26 | 14.17 | 1.91 | 1 gal | Low to Mid |
| | 12/20/2013 | 10:45 | 11.45 | 12.72 | 1.27 | 1.25 gal | Mid to Low |
| | 1/27/2014 | 10:00 | 10.98 | 12.32 | 1.34 | 1 gal | Low |
| 2/25/2014 | 13:00 | 10.81 | 11.80 | 0.99 | 0.5 gal | Mid | |
| 3/20/2014 | 9:00 | 11.08 | 11.70 | 0.62 | 0.5 gal | Mid to High | |
| 4/29/2014 | 12:30 | 10.81 | 11.42 | 0.61 | 0.5 gal | Mid to Low | |
| 5/22/2014 | 13:00 | 11.17 | 11.75 | 0.58 | 0.5 gal | Mid to High | |
| 6/17/2014 | Replaced RCA-21 with RW-1. | | | | | | |
| RW-1 | 7/2/2014 | NA | 10.24 | 10.26 | 0.02 | NR | NS |
| | 7/23/2014 | NA | trace | 10.46 | trace | NR | NS |
| | October 2014 | NA | 10.67 | 10.68 | 0.01 | NR | NS |
| | April 2015 | NA | trace | 9.64 | trace | NR | NS |
| | October 2015 | NA | trace | 11.14 | trace | NR | NS |
| | May 2016 | NA | trace | 6.07 | trace | NR | NS |
| | October 2016 | Decommissioned | | | | | |

Notes: NR = Not Recovered
Volume purged was noted as a mixture of LNAPL and groundwater
NS= Not Surveyed

RCA-21 LNAPL DATA GAP

642 Allens Avenue
 Providence, Rhode Island

| Well ID | Date | Gauging Time | Depth to LNAPL (feet) | Depth to Water (feet) | LNAPL Thickness (feet) | Estimated Volume Purged (gallons) | Tide Condition |
|-----------|------------|--------------|-----------------------|-----------------------|------------------------|-----------------------------------|----------------|
| RW-1 | 7/1/2011 | NR | 10.07 | 13.65 | 3.58 | NR | NR |
| | 8/3/2011 | NR | 10.72 | 13.66 | 2.94 | NR | NR |
| | 2/3/2012 | 13:00 | 10.95 | 13.74 | 2.79 | 2.25 gal | Mid |
| | 2/8/2012 | 14:30 | 10.93 | 13.28 | 2.35 | 2 gal | Low |
| | 6/19/2014 | 9:35 | 10.30 | 10.30 | trace | NR | Mid-Low |
| | 7/24/2014 | 15:00 | 10.46 | 10.46 | trace | NR | Mid |
| | 8/28/2014 | 11:00 | 10.54 | 10.55 | 0.01 | NR | High |
| | 9/29/2014 | 11:15 | 11.06 | 11.06 | trace | NR | High |
| | 10/30/2014 | 12:00 | 10.67 | 10.68 | 0.01 | NR | High |
| | 11/13/2014 | 12:05 | 10.55 | 10.55 | trace | NR | High |
| | 12/12/2014 | 13:00 | 8.80 | 8.80 | trace | NR | Mid |
| | 1/29/2015 | 11:30 | 10.54 | 10.54 | trace | NR | Mid |
| | 2/25/2015 | 9:00 | 10.92 | 10.92 | trace | NR | High |
| | 3/23/2015 | 9:30 | 10.25 | 10.25 | trace | NR | High |
| | 4/9/2015 | 3:30 | 9.64 | 9.64 | trace | NR | Mid |
| | 5/22/2015 | 7:30 | 10.49 | 10.49 | trace | NR | Low |
| | 6/17/2015 | 3:00 | 10.92 | 10.92 | trace | NR | Low |
| | 7/17/2015 | 11:15 | 10.26 | 10.26 | trace | NR | Mid |
| | 8/28/2015 | 12:00 | 10.84 | 10.84 | trace | NR | Low |
| | 9/16/2015 | 9:30 | 11.16 | 11.16 | trace | NR | Mid-High |
| | 10/24/2015 | 9:00 | 11.02 | 11.02 | trace | NR | High |
| | 11/17/2015 | 12:00 | 11.47 | 11.47 | trace | NR | High |
| | 12/30/2015 | 11:30 | 10.19 | 10.19 | trace | NR | High |
| | 1/29/2016 | 8:30 | 9.87 | 9.87 | trace | NR | High |
| 2/22/2016 | 11:00 | 10.17 | 10.17 | trace | NR | Low | |
| 3/17/2016 | 8:00 | 9.67 | 9.67 | trace | NR | Mid-Low | |
| 4/28/2016 | 3:30 | 9.95 | 9.95 | trace | NR | Mid-High | |
| 5/18/2016 | 8:45 | 6.07 | 6.07 | trace | NR | Mid | |
| 6/10/2016 | 11:30 | 10.22 | 10.22 | trace | NR | Mid-High | |

Notes: NR = Not Recovered
 Volume purged was noted as a mixture of LNAPL and groundwater

**TABLE W-5 - GROUNDWATER ANALYTICAL DATA
RCA-21 LNAPL DATA GAP**

642 Allens Ave
Providence, Rhode Island

| | RIDEM Upper Concentration Limit (UCL) | RIDEM GB Groundwater Objectives | Sample ID: | RCA-21 | RCA-40 | | |
|--|---|---------------------------------------|--------------|-------------|------------|----------------|----------------|
| | | | Sample Date: | March 1996 | March 1996 | September 2003 | September 2005 |
| | | | Units | | | | |
| Volatile Organic Compounds (VOCs) (ppm) | | | | | | | |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | 0.076 | 0.0069 | 0.0322 |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | 0.00406 | 0.0019 |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | 0.0012 |
| Acetone | NE | NE | mg/L | ND | ND | ND | 0.102 |
| Benzene | 18 | 0.14 | mg/L | ND | 0.09 | 0.0318 | 0.0306 |
| Ethylbenzene | 16 | 1.6 | mg/L | ND | ND | 0.0011 | 0.0097 |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | 0.00102 | 0.0025 |
| Naphthalene | NE | 2.67 | mg/L | 29.5 | 0.38 | 0.00782 | 0.0205 |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0027 |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | 0.0014 |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | 0.00453 | 0.0065 |
| Semi-Volatile Organic Compounds (SVOCs) (ppm) | | | | | | | |
| 2-Methylnaphthalene | NE | NE | mg/L | 8.78 | 1.12 | NA | NA |
| Acenaphthene | NE | NE | mg/L | 0.76 | ND | NA | NA |
| Acenaphthylene | NE | NE | mg/L | 2.9 | 1.23 | NA | NA |
| Anthracene | NE | NE | mg/L | 3.67 | ND | NA | NA |
| Benzo [a] Anthracene | NE | NE | mg/L | 0.319 | ND | NA | NA |
| Benzo [a] Pyrene | NE | NE | mg/L | 0.138 | ND | NA | NA |
| Benzo [b] Fluoranthene | NE | NE | mg/L | 0.153 | ND | NA | NA |
| Chrysene | NE | NE | mg/L | 0.229 | ND | NA | NA |
| Fluoranthene | NE | NE | mg/L | 0.615 | ND | NA | NA |
| Fluorene | NE | NE | mg/L | 1.4 | ND | NA | NA |
| Naphthalene | NE | 2.67 | mg/L | 23.5 | ND | NA | NA |
| Phenanthrene | NE | NE | mg/L | 3.54 | ND | NA | NA |
| Pyrene | NE | NE | mg/L | 0.846 | ND | NA | NA |
| Total Petroleum Hydrocarbons (ppm) | | | | | | | |
| TPH | NE | NE | mg/L | 595 | 281 | NA | NA |
| TPH Fingerprint | NE | NE | N/A | Fuel Oil | Fuel Oil | NA | NA |

Notes:

ND - Not Detected NE - Not Established
NA - Not Analyzed N/A - Not Applicable

Bold Concentrations and shaded cells indicate an exceedance of RIDEM GB Groundwater Objectives

Red text and underlined concentrations indicate an exceedance of RIDEM GB Upper Concentration Limits

- This table indicates only compounds that were detected, other compounds were analyzed for, but not included here as there were no detections.
- The detected concentrations were compared to RIDEM Method 1 Criteria.

TABLE W-6 - GROUNDWATER TPH FINGERPRINTING RESULTS

File No. 03.00033554.01

RCA-21 LNAPL DATA GAP

1/5/2024

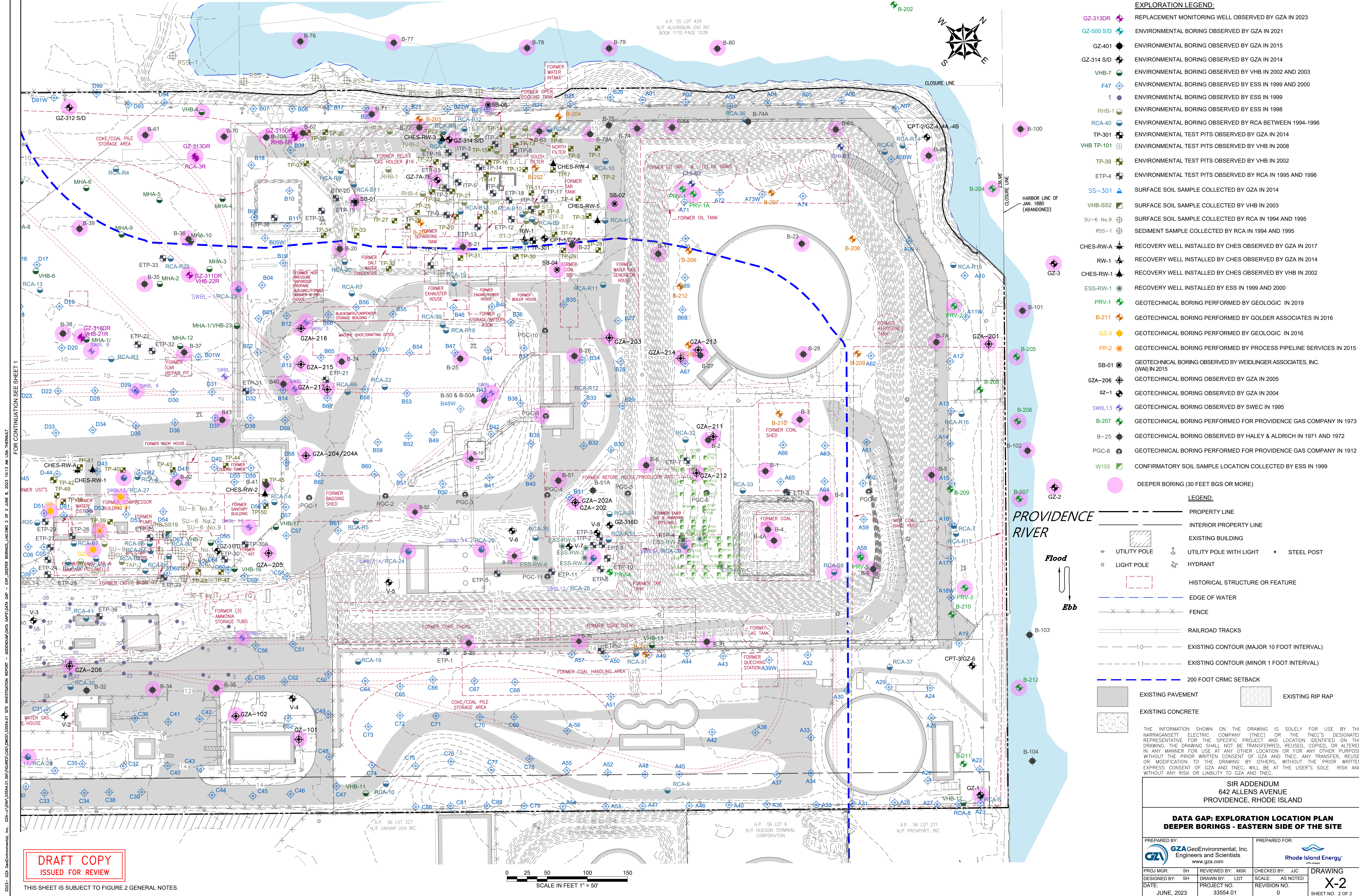
642 Allens Avenue
Providence, Rhode Island

| | Well ID: | RCA-21 | RCA-40 | | |
|-------------------------------------|----------|------------|------------|----------------|----------------|
| | Date: | March 1996 | March 1996 | September 2003 | September 2005 |
| | Units | | | | |
| Total Petroleum Hydrocarbons | | | | | |
| TPH | mg/L | 595 | 281 | NA | NA |
| TPH Fingerprint | N/A | Fuel Oil | Fuel Oil | NA | NA |



APPENDIX X

DATA GAP – DEEPER BORINGS



- EXPLORATION LEGEND:**
- GZ-313DR REPLACEMENT MONITORING WELL OBSERVED BY GZA IN 2023
 - GZ-500 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2021
 - GZ-401 ENVIRONMENTAL BORING OBSERVED BY GZA IN 2015
 - GZ-314 S/D ENVIRONMENTAL BORING OBSERVED BY GZA IN 2014
 - VHB-7 ENVIRONMENTAL BORING OBSERVED BY VHB IN 2002 AND 2003
 - F47 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999 AND 2000
 - 1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1999
 - RHB-1 ENVIRONMENTAL BORING OBSERVED BY ESS IN 1998
 - RCA-40 ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996
 - TP-301 ENVIRONMENTAL TEST PITS OBSERVED BY GZA IN 2014
 - VHB-TP-101 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
 - TP-39 ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
 - ETP-4 ENVIRONMENTAL TEST PITS OBSERVED BY RCA IN 1995 AND 1996
 - SS-301 SURFACE SOIL SAMPLE COLLECTED BY GZA IN 2014
 - VHB-SS2 SURFACE SOIL SAMPLE COLLECTED BY VHB IN 2003
 - SU-6 No.9 SURFACE SOIL SAMPLE COLLECTED BY RCA IN 1994 AND 1995
 - RSS-1 SEDIMENT SAMPLE COLLECTED BY RCA IN 1994 AND 1995
 - CHES-RW-A RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2017
 - RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY GZA IN 2014
 - CHES-RW-1 RECOVERY WELL INSTALLED BY CHES OBSERVED BY VHB IN 2002
 - ESS-RW-1 RECOVERY WELL INSTALLED BY ESS IN 1999 AND 2000
 - PRV-1 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2019
 - B-211 GEOTECHNICAL BORING PERFORMED BY GOLDER ASSOCIATES IN 2016
 - GZ-3 GEOTECHNICAL BORING PERFORMED BY GEOLOGIC IN 2016
 - PP-2 GEOTECHNICAL BORING PERFORMED BY PROCESS PIPELINE SERVICES IN 2015
 - SB-01 GEOTECHNICAL BORING OBSERVED BY WEIDLINGER ASSOCIATES, INC. (WAI) IN 2015
 - GZA-206 GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
 - GZ-1 GEOTECHNICAL BORING OBSERVED BY GZA IN 2004
 - SWBL13 GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995
 - B-207 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1973
 - B-25 GEOTECHNICAL BORING OBSERVED BY HALEY & ALDRICH IN 1971 AND 1972
 - PGC-8 GEOTECHNICAL BORING PERFORMED FOR PROVIDENCE GAS COMPANY IN 1912
 - W155 CONFIRMATORY SOIL SAMPLE LOCATION COLLECTED BY ESS IN 1999
 - DEEPER BORING (30 FEET BGS OR MORE)

- LEGEND:**
- PROPERTY LINE
 - INTERIOR PROPERTY LINE
 - EXISTING BUILDING
 - UTILITY POLE
 - UTILITY POLE WITH LIGHT
 - STEEL POST
 - HYDRANT
 - HISTORICAL STRUCTURE OR FEATURE
 - EDGE OF WATER
 - FENCE
 - RAILROAD TRACKS
 - EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
 - EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
 - 200 FOOT CRMC SETBACK
 - EXISTING PAVEMENT
 - EXISTING RIP RAP
 - EXISTING CONCRETE

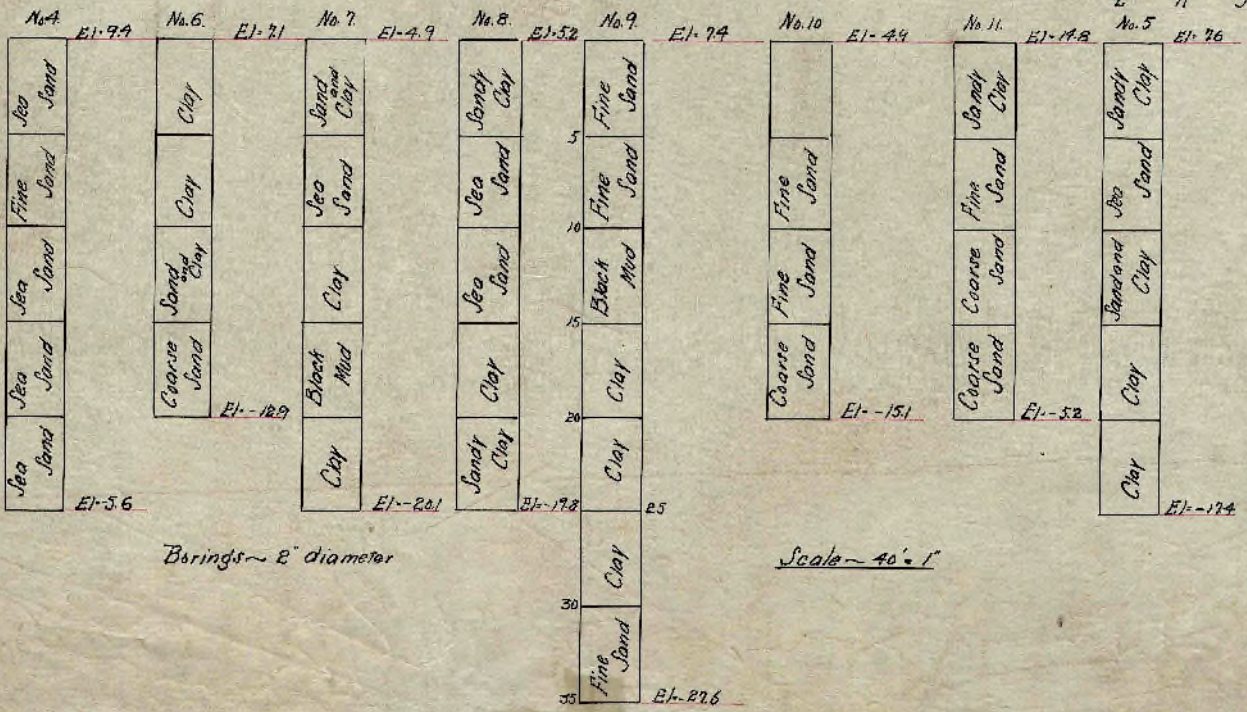
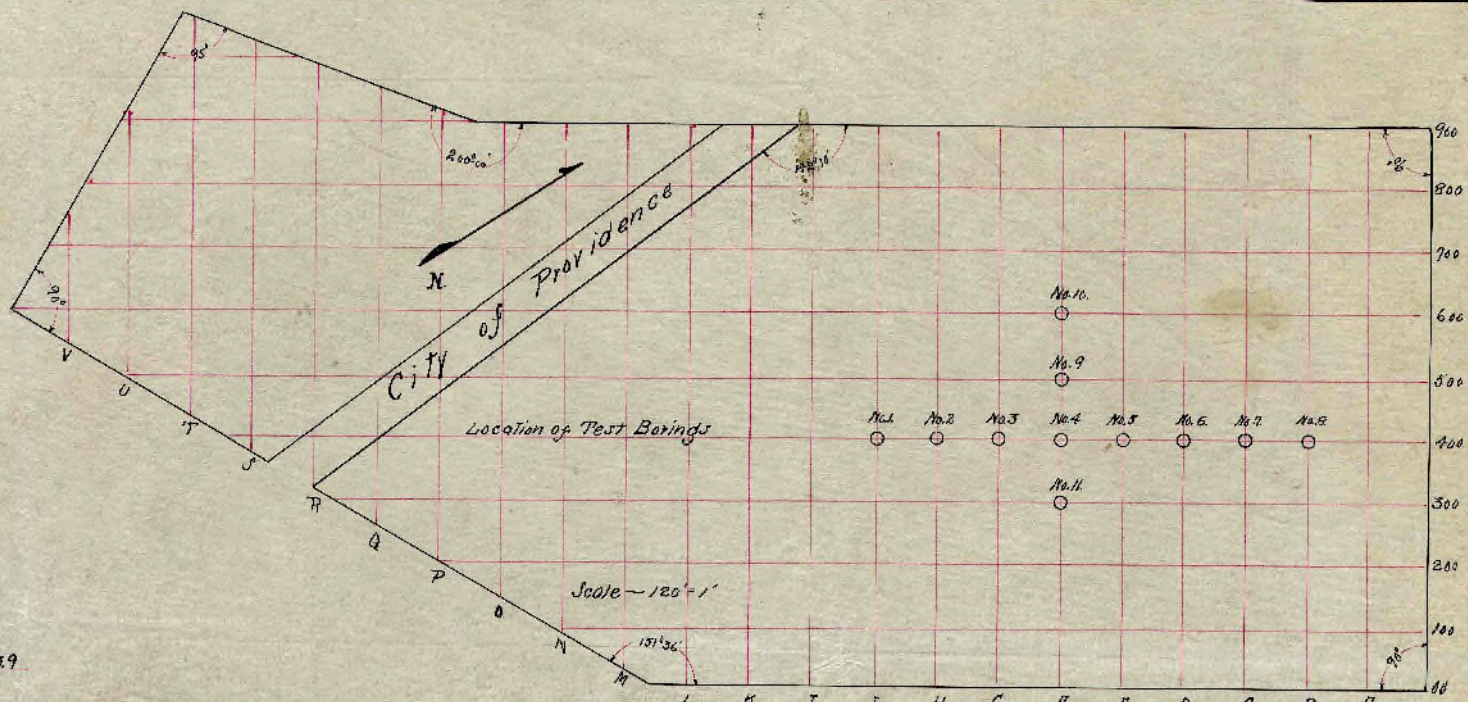
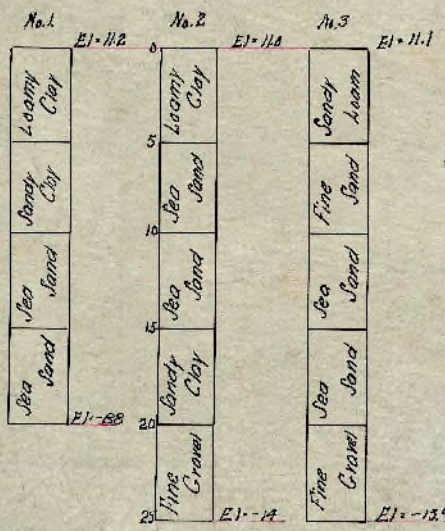
THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY THE MARRICANSETT ELECTRIC COMPANY (TNEC) OR THE TNEC'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND TNEC. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND TNEC, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND TNEC.

| | | | |
|--|--|---|---|
| SIR ADDENDUM 642 ALLENS AVENUE PROVIDENCE, RHODE ISLAND | | | |
| DATA GAP: EXPLORATION LOCATION PLAN DEEPER BORINGS - EASTERN SIDE OF THE SITE | | | |
| PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com | PREPARED FOR: Rhode Island Energy www.rienergy.com | PROJ MGR: SH DESIGNED BY: SH DATE: JUNE, 2023 | REVIEWED BY: MSK DRAWN BY: LDT PROJECT NO: 33554.01 |
| CHECKED BY: JJC SCALE: AS NOTED REVISION NO: 0 | DRAWING X-2 SHEET NO. 2 OF 2 | | |

DRAFT COPY
ISSUED FOR REVIEW

SCALE IN FEET 1" = 50'

THIS SHEET IS SUBJECT TO FIGURE 2 GENERAL NOTES.



Borings ~ 8" diameter

Scale ~ 40' = 1"

Providence Gas Company
Sassafras Point
Test Borings under Sassafras Point Plat
Scale ~ 40' = 1" June 5, 1912.

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

SHEET 1 OF 3
 DATE _____
 HOLE NO. 1
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| GROUND WATER OBSERVATIONS | | Rods - "AW" Type | CASING | SAMPLER | CORE BAR. | Date | | Time | |
|---------------------------|-------|---------------------|--------|---------|-----------|--------------------------------|----------|------|--|
| At | after | | | | | START | COMPLETE | | |
| 9.0' | 16 | | | S/S | | 3/5/71 | | | |
| 8.5' | 1/2 | | | 1 3/8" | | 3/5/71 | | | |
| | | Size I.D. | NX | 140# | | TOTAL HRS. | | | |
| | | Hammer Wt. | 300# | 30" | BIT | BORING FOREMAN <u>Peterson</u> | | | |
| | | Hammer Fall | 24" | | | INSPECTOR <u>Debbie Huff</u> | | | |
| | | | | | | SOILS ENGR. | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 7 | | 0'-1'6" | D | 3 | 2 | 3 | Dry loose | 1.0' | Br. F-M SAND, bricks, cinders | 1 | 18" | 18" |
| 6 | | | | | | | | | Layer of fine SAND (FILL) | | | |
| 19 | | | | | | | | 4.0' | | | | |
| 20 | | | | | | | | | | | | |
| 25 | | | | | | | Wet loose | | | | | |
| 25 | 5'-6' | | D | 3 | 4 | | V. dense | | layer of black CINDERS | 2 | 12" | 12" |
| 23 | 6'-6'2" | | D** | 60 | | | | 7'6" | 6'-6'2" CONCRETE | 2A | 2" | 2" |
| 13 | 6'6"-9'6" | | D | 3 | 3 | 8 | Wet M. dense | | Gray green fine to medium SAND, lit. silt & F-M gravel | 3 | 36" | 18" |
| 17 | | | | 8 | 8 | 5 | | 9'6" | | | | |
| 9 | | | | | | | Wet soft | | Gray ORGANIC SILT, some peat trace wood | 4 | 18" | 18" |
| 5 | 10'-11'6" | | D | 2 | 1 | 1 | | 13' | | | | |
| 8 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 24 | | | | | | | Wet medium dense | | Gray fine to coarse SAND, some fine to coarse gravel trace silt | 5 | 18" | 12" |
| 28 | | | | | | | | | | | | |
| 10 | 15'-16'6" | | D | 13 | 13 | 9 | " | | | | | |
| 20 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 24 | 20'-21'6" | | D | 17 | 11 | 14 | " | | | 6 | 18" | 12" |
| 32 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 23 | 25'-26'6" | | D | 24 | 14 | 5 | " | 25' | Yellow brown fine to coarse SAND, some silt, trace cobbles | 7 | 18" | 12" |
| 23 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 36 | | | | | | | Wet very dense | | at 30' some fine to coarse gravel | 8 | 18" | 12" |
| 31 | 30'-31'6" | | D | 15 | 23 | 36 | | 34' | | | | |
| 72 | | | | | | | | | | | | |
| 98 | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 31 | 35'-36'6" | | D | 32 | 32 | 32 | Wet very stiff | | Pushing COBBLE | - | 18" | 0" |
| 38 | | | | | | | | | | | | |
| 75 | 36'6"-38' | | D | 25 | 13 | 17 | | | Light gray brown SILT | 9 | 18" | 12" |
| 77 | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | |

GROUND SURFACE TO 95' USED NX CASING: THEN S/S to 97'

| | | | |
|--|---|--|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V. Stiff |
| | | | SUMMARY: Earth Boring <u>97'</u> Rock Coring Samples <u>22</u> |
| | | | HOLE NO <u>1</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3
 DATE _____
 HOLE NO. 1
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | | | | |
|---------------------------|-------------------|-------------|-------------------|-----------|-------------------------|------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
| At <u>Same as #1</u> | after _____ Hours | Type | <u>Same as #1</u> | _____ | START <u>Same as #1</u> | _____ a.m. |
| _____ | after _____ Hours | Size I.D. | _____ | _____ | COMPLETE _____ | _____ a.m. |
| | | Hammer Wt. | _____ | _____ BIT | TOTAL HRS. _____ | |
| | | Hammer Fall | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 55 | | 40'-41'6" | D | 12 | 9 | 10 | Wet very stiff | 44' | Light gray brown SILT | 10 | 18" | 12" |
| 60 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 77 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 28 | | 45'-47' | D | 7 | 8 | 8 | Wet medium dense | 50' | Brown fine to coarse SAND, trace silt & fine to medium gravel (running sand) | 11 | 24" | 12" |
| 37 | | | | 9 | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | |
| 52 | | 50'-52' | D | 60 | 40 | 38 | Wet very dense | 53' | Brown fine to coarse SAND and gravel, trace silt (cobbles) | 12 | 24" | 6" |
| 90 | | | | 52 | | | | | | | | |
| 76 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | |
| 72 | | 55'-56'6" | D | 20 | 22 | 23 | Wet dense | | Gray fine to coarse SAND, some silt & fine to coarse gravel (cobbles) | 13 | 18" | 18" |
| 100 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 120 | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | |
| 89 | | 60'-62' | D | 32 | 23 | 28 | Wet very dense | 62' | | 14 | 24" | 12" |
| 109 | | | | 23 | | | | | | | | |
| 74 | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | |
| 73 | | 65'-67' | D | 21 | 16 | 15 | Wet dense | | Blue gray fine to medium SAND, little silt, trace fine to coarse gravel (cobbles) | 15 | 24" | 6" |
| 73 | | | | 19 | | | | | | | | |
| 86 | | | | | | | | | | | | |
| 130 | | | | | | | | | | | | |
| 115 | | | | | | | | | | | | |
| 60 | | 70'-72' | D | 15 | 20 | 28 | Wet very dense | | | 16 | 24" | 6" |
| 105 | | | | 36 | | | | | | | | |
| 130 | | | | | | | | | | | | |
| 102 | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | |
| 60 | | 75'-76'6" | D | 30 | 22 | 23 | " | 76'6" | | - | 18" | 0" |
| 110 | | 76'6"-77'6" | D | 27 | 49 | | " | | Gray fine to coarse SAND, some fine to coarse gravel & silt (cobbles) | 17 | 12" | 6" |
| 172 | | | | | | | | | | | | |
| 233 | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | |
| 125 | | | | | | | | | | | | |

| | | | |
|---------------------------------|------------------|---|----------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: _____ |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Earth Boring _____ |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Cohesive Consistency |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | 0-4 Soft 30 + Hard |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | 4-8 M/Stiff |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | 8-15 Stiff |
| | | 50+ Very Dense | 15-30 V. Stiff |
| | | | HOLE NO <u>1</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 PORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

DATE _____
 HOLE NO. 2
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| GROUND WATER OBSERVATIONS | | Rods-"AW" Type | CASING Size I.D. | SAMPLER HW | CORE BAR. S/S | Date | Time |
|---------------------------|----------------------|------------------------|------------------------|---------------|------------------|--------------------------------|--|
| At <u>8'7"</u> | after <u>3</u> Hours | | | | | | |
| <u>45' casing</u> | after _____ Hours | Hammer Wt. <u>300#</u> | Hammer Fall <u>24"</u> | <u>1 3/8"</u> | <u>140#</u> | START <u>3/16/71</u> | <u>_____</u> o.m. <u>_____</u> p.m. |
| | | | | | BIT | COMPLETE <u>3/16/71</u> | <u>_____</u> o.m. <u>_____</u> p.m. |
| | | | | | | TOTAL HRS. _____ | |
| | | | | | | BORING FOREMAN <u>Peterson</u> | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From- To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 80 | | 0'-1'6" | D | 35 | 20 | 18 | Dry dense | 2' | FILL - ASPHALT, concrete, bricks, sand & gravel | 1 | 18" | 12" |
| 55 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 8 | | 5'-6'6" | D | 8 | 9 | 8 | Dry medium dense | | Yellow brown fine to medium SAND, some fine to medium gravel, trace silt FILL | 2 | 18" | 16" |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 4 | | 10'-11'6" | D | 7 | 5 | 4 | Wet loose | | | 3 | 18" | 12" |
| 8 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | 15'-15'6" | D | 7 | | | " | 15' | gray fine to coarse SAND | 4 | 6" | 6" |
| 7 | | 15'6"-16'6" | D | | 4 | 4 | Wet Stiff | 17'0" | Gray ORGANIC SILT & fine to medium sand | 4A | 12" | 12" |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | 20'-21'6" | D | 2 | 1 | 1 | Wet soft | | Gray ORGANIC SILT, trace sea shells & peat | 5 | 18" | 18" |
| 9 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 15 | | 25'-26'6" | D | 1 | - | 1 | " | | | 6 | 18" | 18" |
| 15 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 15 | | 30'-31.5' | D | 1 | - | 1 | " | | | 7 | 18" | 18" |
| 15 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 30 | | 35'-36' | D | 5 | 8 | | W-Stiff | 35' | Gray ORG. SILT & F-M sand | 8 | 12" | 12" |
| 50 | | 36'-37' | D | 17 | 21 | | Wet dense | 36' | Gray fine to medium SAND, trace fine to coarse gravel & silt | 8A | 12" | 12" |
| 50 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |

GROUND SURFACE TO 45' USED HW "CASING: THEN S/S to 47'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-20 Very Stiff

SUMMARY:
 Earth Boring 47'
 Rock Coring _____
 Samples 12
 HOLE NO. 2

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 3
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| | | | | | | | | |
|-------------------------------------|-------------------------|---|--------------|---------------|----------------|-------|--|--------------|
| GROUND WATER OBSERVATIONS | | Rods - "AW" Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | CASING _____ | SAMPLER _____ | CORE BAR _____ | Date | Time | a.m. p.m. |
| At <u>9'</u> after <u>1/2</u> Hours | START <u>3/13/71</u> | | | | | _____ | TOTAL HRS. _____ BORING FOREMAN <u>Peterson</u> INSPECTOR _____ SOILS ENGR. _____ | |
| <u>15'</u> Casing | COMPLETE <u>3/15/71</u> | _____ | | | | | | |
| _____ after _____ Hours | | | | | | | | |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 6 | 0'-1'6" | D | 2 | 3 | 3 | Dry loose | 2' | Brown fine SAND (FILL) | 1 | 18" | 12" |
| 10 | | | | | | Dry | | | | | |
| 65 | | | | | | very dense | | Black COAL, fine sand some silt | 2 | 18" | 12" |
| 85 | 3'-4'6" | D | 35 | 40 | 15 | loose | 6' | | 3 | 12" | 6" |
| 30 | | | | | | V. dense | 6' | CONCRETE | 3A | 6" | 6" |
| 8 | 5'-6' | D | 5 | 5 | | | | | | | |
| 120 | 6'-6'6" | D | | | 100 | | | | | | |
| 40 | | | | | | | | | | | |
| 25 | | | | | | Wet loose | | Black fine to medium SAND trace coal FILL | 4 | 18" | 12" |
| 20 | | | | | | | 12' | | | | |
| 3 | 10'-11'6" | D | 6 | 5 | 3 | | | | | | |
| 3 | | | | | | | | | | | |
| 6 | 12'-15' | D | 1 | per ft | | Wet soft | | Gray ORGANIC SILT, trace peat | 5 | 36" | 24" |
| 6 | | | 2 | | | | 15' | | | | |
| 10 | | | 3 | | | | | | | | |
| 7 | 15'-16'6" | D | 3 | 5 | 7 | Wet medium dense | | Gray fine to coarse SAND & organic silt | 6 | 18" | 12" |
| 9 | | | | | | | 18' | | | | |
| 10 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 16 | 20'-21'6" | D | 3 | 6 | 10 | " | | Gray brown fine to coarse SAND, little fine to coarse gravel, trace silt | 7 | 18" | 12" |
| 21 | | | | | | | 23' | | | | |
| 31 | | | | | | | | | | | |
| 41 | | | | | | | | | | | |
| 55 | | | | | | Wet very dense | | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt | 8 | 18" | 12" |
| 30 | 25'-26'6" | D | 29 | 21 | 31 | | | | | | |
| 41 | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
| 65 | | | | | | Wet medium dense | | | | | |
| 25 | 30'-32' | D | 20 | 13 | 12 | | | | 9 | 24" | 18" |
| 32 | | | 12 | | | | | | | | |
| 45 | | | | | | | | | | | |
| 60 | | | | | | | | | | | |
| 45 | | | | | | | | | | | |
| 22 | 35'-37' | D | 8 | 10 | 16 | Wet dense | | | 10 | 24" | 18" |
| 30 | | | 17 | | | | | | | | |
| 40 | | | | | | | | | | | |
| 60 | | | | | | | | | | | |
| 56 | | | | | | | | | | | |

GROUND SURFACE TO 55' USED HW "CASING: THEN o.e. rod to 56'6"

| | | | | |
|--|---|--|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>56'6"</u> Rock Coring _____ Samples <u>15</u> |
|--|---|--|---|---|

HOLE NO. 3

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 PORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

SHEET 1 OF 2
 DATE _____
 HOLE NO. 4
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| | | | | |
|--|--|--|------------------------------|---|
| GROUND WATER OBSERVATIONS <u>9'</u> after <u>16</u> Hours <u>40'</u> casing after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>BX</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ BIT _____ | Date _____ Time _____ START <u>3/10/71</u> a.m. COMPLETE <u>3/11/71</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>Peterson</u> INSPECTOR <u>Debbie Huff</u> SOILS ENGR. _____ |
|--|--|--|------------------------------|---|

LOCATION OF BORING:

| DEP. | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 5 | | 0'-2' | D | 3 | 5 | 5 | Dry medium dense | 3' | Gray brown fine to medium SAND, little silt & fine to medium gravel | 1 | 18" | 12" |
| 5 | | | | 5 | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 2 | | | | | | | Wet loose | 7' | Gray brown fine to coarse SAND, trace fine to medium gravel & silt | 2 | 24" | 6" |
| 1 | | 5'-7' | D | 1 | - | 1 | | | | | | |
| 1 | | 7'-8' | D | 7 | 35 | | Wet dense | 9' | Gray-blue fine to coarse SAND, some F-C gravel Lit. Silt | 3 | 12" | 12" |
| 19 | | | | | | | | | | | | |
| 300 | | 9'-10' | D | | | | | 10' | Wood & concrete | 4 | 12" | - |
| 14 | | 10'-12' | D | 13 | 9 | 7 | Wet medium dense | | Gray fine to coarse SAND, some fine to coarse gravel trace silt (oil odor noted) | 5 | 24" | 12" |
| 23 | | | | 9 | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 25 | | | | | | | Wet dense | | | | | |
| 29 | | | | | | | | | | | | |
| 15 | | 15'-16'6" | D | 15 | 16 | 17 | | | layers of dense gravel & cobbles | 6 | 18" | 12" |
| 30 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 27 | | | | | | | Wet very dense | | | | | |
| 15 | | 20'-21'6" | D | 19 | 20 | 34 | | 24' | | 7 | 18" | 6" |
| 30 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 20 | | | | | | | Wet very stiff | | Brown SILT (varved), little fine sand in layers | 8 | 24" | 18" |
| 16 | | 25'-26'6" | D | 13 | 10 | 12 | | | | | | |
| 17 | | | | 10 | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | |
| 5 | | 30'-32' | D | 12 | 14 | 18 | " | | | 9 | 24" | - |
| 6 | | | | 10 | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 7 | | 35'-36'6" | D | 6 | 12 | 14 | " | | Blue gray SILT | 10 | 18" | 18" |
| 8 | | | | | | | | 37'6" | | | | |
| 17 | | | | | | | Wet V.dense | 39'6' | Gray blue TILL - fine to coarse sand & silt | 11 | 18" | 4" |
| 31 | | 38'-39'6" | D | 36 | 42 | 30 | | | See following page | | | |
| 40 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |

GROUND SURFACE TO 50' USED BX "CASING: THEN S/S to 52'

| | | | |
|--|---|--|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
|--|---|--|---|

SUMMARY:
 Earth Boring 52'
 Rock Coring _____
 Samples 17
HOLE NO. 4

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 5
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | Rods- "AW" | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|------------------------|--------|---------------|-----------|--------------------------------|------------|
| At <u>9'0"</u> | after _____ Hours | Type _____ | _____ | <u>S/S</u> | _____ | START <u>3/11/71</u> | _____ a.m. |
| _____ | after _____ Hours | Size I.D. <u>BX</u> | _____ | <u>1 3/8"</u> | _____ | COMPLETE <u>3/11/71</u> | _____ a.m. |
| | | Hammer Wt. <u>300#</u> | _____ | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | _____ | <u>30"</u> | _____ | BORING FOREMAN <u>Peterson</u> | |
| | | | | | | INSPECTOR <u>Debbie Huff</u> | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 5 | | 0'-1' | D | 4 | 13 | | Wet M.dense | 1' | Gray F-M SAND & gravel FILL | 1 | 12" | 8" |
| 10 | | 1'-1'6" | D | | | 23 | Dry | 1'6" | Black COAL FILL | 1A | 6" | 6" |
| 21 | | 1'6"-2' | D | | | 24 | M.dense | | Yellow brown fine to medium SAND, trace fine to coarse gravel & silt FILL | 1B | 6" | 6" |
| 20 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 9 | | 5'-7' | D | 12 | 12 | 12 | " | 7.5' | | | 2 | 24" |
| 15 | | | | 12 | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 15 | | | | | | | | 9' | Brown fine SAND & gravel FILL | | | |
| 13 | | | | | | | Wet medium dense | | Brown fine to medium SAND, trace fine gravel & silt | | | |
| 3 | | 10'-12' | D | 6 | 6 | 6 | | 12' | | | 3 | 24" |
| 8 | | | | 5 | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 4 | | 15'-17' | D | 4 | 3 | 4 | Wet loose | | Brown fine SAND, little silt, trace coarse sand | 4 | 24" | 12" |
| 6 | | | | 4 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 9 | | | | | | | | 19' | | | | |
| 14 | | | | | | | Wet M.dense | | Gray brown fine to coarse SAND, lit. F-M gravel, T/silt | | | |
| 5 | | 20'-21'6" | D | 5 | 8 | 9 | | 21'6" | | | 5 | 18" |
| 7 | | 21'6"-22' | D | 8 | | | | | | 5A | 6" | 3" |
| 19 | | | | | | | | | Brown fine to coarse SAND some fine to coarse gravel trace silt & cobbles | | | |
| 36 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |
| 17 | | 25'-27' | D | 13 | 9 | 9 | Wet medium dense | | | 6 | 24" | 12" |
| 16 | | | | 9 | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 17 | | 30'-32' | D | 17 | 20 | 23 | Wet dense | | | 7 | 24" | 18" |
| 40 | | | | 25 | | | | | | | | |
| 75 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | |
| 31 | | 35'-37' | D | 20 | 22 | 18 | " | | | 8 | 24" | 18" |
| 41 | | | | 30 | | | | 37' | | | | |
| 110 | | | | | | | | | | | | |
| 230 | | | | | | | | | Brown SILT W/layers of fine to coarse sand, trace fine gravel | | | |
| 100 | | | | | | | | | | | | |

GROUND SURFACE TO 50' USED BX "CASING: THEN S/S to 52'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V. Stiff

SUMMARY:
 Earth Boring 52'
 Rock Coring _____
 Samples 15
 HOLE NO. 5

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 6
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 PORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | | | RODS - "AW" | CASING | SAMPLER | CORE BAR. | Date | | Time | |
|---------------------------|-------|-------|------|------------------------|--------|---------------|-----------|--------------------------------|----------|------|--|
| At | after | Hours | Type | | | | | START | COMPLETE | | |
| 9' | | 1/2 | | Size I.D. <u>HW</u> | | <u>S/S</u> | | 3/16/71 | | | |
| 60' | | | | Hammer Wt. <u>300#</u> | | <u>1 3/8"</u> | | 3/17/71 | | | |
| | | | | Hammer Fall <u>24"</u> | | <u>30"</u> | BIT | TOTAL HRS. _____ | | | |
| | | | | | | | | BORING FOREMAN <u>Peterson</u> | | | |
| | | | | | | | | INSPECTOR <u>Dave Andrews</u> | | | |
| | | | | | | | | SOILS ENGR. _____ | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 10 | | 0'-6" | D | 4 | | | dry loose | 0.5' | Lt. Br. fine SAND, T/F/Gravel | 1 | 6" | 6" |
| 70 | | 6"-1'6" | D | | 20 | 30 | Dry | | Black SAND, cinders, concrete, bricks FILL | 1A | 12" | 12" |
| 80 | | | | | | | V. dense | 3.0' | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 5 | | 5'-6'6" | D | 2 | 2 | 2 | Dry loose | | Dark brown CINDERS, ashes, bricks FILL | 2 | 18" | 18" |
| 5 | | | | | | | | 8' | | | | |
| 2 | | | | | | | | | | | | |
| 7 | | 8'-9'6" | D | 3 | 3 | 4 | Moist loose | 9'6" | Gray brown F-C SAND, lit. F-M gravel & silt | 3 | 18" | 12" |
| 10 | | | | | | | Wet loose | | Blue gray fine to coarse SAND, some fine to coarse gravel, little silt (oil odor) FILL | 4 | 18" | 12" |
| 5 | | 10'-11'6" | D | 5 | 5 | 4 | | | | | | |
| 8 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | 15' | | | | |
| 18 | | | | | | | | | | | | |
| 25 | | 15'-16'6" | D | 7 | 9 | 8 | Wet medium dense | 19' | Gray fine SAND, little silt (oil odor noted) FILL | 5 | 18" | 18" |
| 60 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | 20'-22' | D | 1 | - | 1 | Wet soft | | Gray ORGANIC SILT, trace sea shells & peat | 6 | 24" | 18" |
| 14 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 9 | | 25'-27' | D | 2 | 2 | 2 | " | | | 7 | 24" | 18" |
| 10 | | | | 2 | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 10 | | 30'-32' | D | 2 | 2 | 1 | " | | | 8 | 24" | 18" |
| 12 | | | | 2 | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 12 | | | | | | | | 35' | | | | |
| 12 | | 35'-37' | D | 1 | 1 | 1 | " | | Dark brown PEAT, some wood trace fine sand | 9 | 24" | 18" |
| 12 | | | | 1 | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 14 | | | | | | | Wet | 39' | | | | |
| 14 | | 39'-40'6" | D | 3 | 3 | 4 | M/stiff | | Blue-gray SILT, & Dk. Br. PEAT | 10 | 18" | 18" |

| | | | |
|---------------------------------|------------------|---|---------------------------|
| GROUND SURFACE TO <u>60'</u> | USED <u>HW</u> | "CASING: THEN <u>S/S to 61.5'</u> | |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Earth Boring <u>61.5'</u> |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | Samples <u>16</u> |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 Very Stiff | |
| | | 30+ Hard | |
| | | | HOLE NO <u>6</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 6
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 PORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-130

| | | | | | |
|--|--------------|---------------------------|------------------|------------------------|------------|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours after _____ Hours | CASING _____ | SAMPLER <u>Same as #1</u> | CORE BAR. _____ | Date <u>Same as #1</u> | Time _____ |
| | Type _____ | Size I.D. _____ | Hammer Wt. _____ | Hammer Fall _____ | BIT _____ |
| | | | | START _____ | o.m. _____ |
| | | | | COMPLETE _____ | p.m. _____ |
| | | | | TOTAL HRS. _____ | |
| | | | | BORING FOREMAN _____ | |
| | | | | INSPECTOR _____ | |
| | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From C-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 23 | | | | | | | Wet | 40.5' | Blue gray SILT | | | |
| 32 | | 40.5'-42' | D | 6 | 9 | 12 | M.dense | 42.5' | Blue gray fine SAND, little silt, trace fine gravel | 11 | 18" | 12" |
| 43 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 35 | | 45'-47' | D | 7 | 14 | 18 | Wet dense | | Brown gray fine to coarse SAND, some fine to coarse gravel, trace silt | 12 | 24" | 18" |
| 45 | | | | 18 | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 35 | | 50'-51'6" | D | 17 | 18 | 17 | " | | | 13 | 18" | 12" |
| 39 | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 43 | | | | | | | | 54' | | | | |
| 60 | | | | | | | Wet medium dense | | Blue gray fine to coarse SAND, little fine to medium gravel & silt | 14 | 18" | 6" |
| 35 | | 55'-56'6" | D | 9 | 9 | 10 | | 57' | | | | |
| 39 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 45 | | 60'-61'6" | D | 18 | 18 | 18 | Wet dense | 61'6" | Blue gray fine to coarse SAND, little fine to coarse gravel, trace silt | 15 | 18" | 12" |
| | | | | | | | | | Bottom of boring 61'6" | | | |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: _____ | THEN _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 Very Stiff |
| SUMMARY: | | | Earth Boring <u>61'6"</u> |
| | | | Rock Coring _____ |
| | | | Samples <u>16</u> |
| | | | HOLE NO. <u>6</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE _____
 HOLE NO. 7A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

To Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 PORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | Rods-"AW" Type | CASING HW | SAMPLER S/S | CORE BAR. | Date | Time | |
|---------------------------|------------------------|-------------------|--------------|----------------|-----------|--------------------------------|------------|--------------|
| At <u>8'</u> | after <u>1/2</u> Hours | | | | | Size I.D. | Hammer Wt. | Hammer Fall |
| <u>40' Casing</u> | after _____ Hours | | <u>300#</u> | <u>1 3/8"</u> | | COMPLETE <u>3/25/71</u> | _____ | a.m. p.m. |
| | | | <u>24"</u> | <u>30"</u> | BIT | TOTAL HRS. _____ | | |
| | | | | | | BORING FOREMAN <u>Peterson</u> | | |
| | | | | | | INSPECTOR <u>Debbie Huff</u> | | |
| | | | | | | SOILS ENGR. _____ | | |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc. | SAMPLE | | |
|--------------------------------|-------------------------------|----------------------|----------------------------|------|-------|---------------------------------------|---------------------------|---|--------|-----|------|
| | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 10 | 0'-2' | D | 5 | 10 | 8 | Dry | 5' | Brown fine to medium SAND, little gravel, trace silt layers of coal FILL | 1 | 24" | 24" |
| 20 | | | 8 | | | medium | | | | | |
| 15 | | | | | | dense | | | | | |
| 12 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 10 | 5'-7' | D | 3 | 3 | 10 | Wet | 13' | Blue-gray fine to coarse SAND, some fine to coarse gravel, little silt (oil odor) FILL | 2 | 24" | 18" |
| 8 | | | 10 | | | medium | | | | | |
| 8 | | | | | | dense | | | | | |
| 25 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 15 | 10'-12' | D | 5 | 6 | 10 | " | 19.5' | Blue-gray fine to medium SAND, trace silt & fine gravel | 3 | 24" | 12" |
| 25 | | | 12 | | | | | | | | |
| 35 | | | | | | | | | | | |
| 55 | | | | | | | | | | | |
| 40 | | | | | | | | | | | |
| 8 | 15'-17' | D | 7 | 6 | 6 | " | 24' | Blue gray fine to coarse SAND, some fine to coarse gravel, trace silt & cobbles | 4 | 24" | 12" |
| 10 | | | 5 | | | | | | | | |
| 12 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 28 | | | | | | | | | | | |
| 12 | 20'-22' | D | 17 | 14 | 14 | " | 42' | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt & cobbles | 5 | 24" | 18" |
| 16 | | | 11 | | | | | | | | |
| 20 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| 20 | 25'-27' | D | 19 | 27 | 27 | Wet very dense | 42' | Bottom of boring 42' | 6 | 24" | 18" |
| 30 | | | 28 | | | | | | | | |
| 65 | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| 35 | | | | | | | | | | | |
| 28 | 30'-32' | D | 15 | 20 | 24 | Wet dense | 42' | Bottom of boring 42' | 7 | 24" | 12" |
| 35 | | | 23 | | | | | | | | |
| 50 | | | | | | | | | | | |
| 60 | | | | | | | | | | | |
| 35 | | | | | | | | | | | |
| 18 | 35'-37' | D | 20 | 25 | 16 | " | 42' | Bottom of boring 42' | 8 | 24" | 12" |
| 38 | | | 25 | | | | | | | | |
| 64 | | | | | | | | | | | |
| 75 | | | | | | | | | | | |
| 90 | 40'-42' | D | 40 | 25 | 28/40 | " | | | | | 9 |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO <u>40'</u> | USED <u>HW</u> | "CASING: THEN <u>S/S to 42'</u> | SUMMARY: Earth Boring <u>42'</u> Rock Coring _____ Samples <u>9</u> |
| Sample Type D=Dry C=Cored W=Washed P=Undisturbed Piston T=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff | HOLE NO. <u>7A</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 8
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | Rods-"AW" Type | CASING Size I.D. | SAMPLER Hammer Wt. | CORE BAR. BIT | Date | | Time |
|---------------------------|-----------------|-------------------|---------------------|-----------------------|------------------|---------|----------|--------------|
| At | after | | | | | START | COMPLETE | |
| 9'6" | after 1/2 Hours | | HW | 300# | | 3/22/71 | 3/23/71 | a.m. p.m. |
| 60' Casing | | | | | | | | |
| 8'6" | after 1/2 Hours | | HW | 140# | | | | a.m. p.m. |
| No Casing | | | 24" | 30" | | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From- To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 5 | | 0'-1'6" | D | 3 | 3 | 3 | Dry loose | | Black ashes, coal, bricks concrete, sand & gravel (fill) | 1 | 18" | 12" |
| 3 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 1 | | 5'-6'6" | D | 3 | 2 | 1 | " | 7' | | 2 | 18" | 6" |
| - | | | | | | | | | | | | |
| - | | | | | | | | | | | | |
| 1 | | 10'-11'6" | D | 3 | 3 | 4 | Wet loose | | Gray brown fine to coarse SAND, some fine to coarse gravel, little silt (oil odor) | 3 | 18" | 12" |
| 6 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 25 | | | | | | | Wet medium dense | | | | | |
| 6 | | 15'-16'6" | D | 7 | 4 | 9 | | | | 4 | 18" | 12" |
| 6 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 1 | | 20'-22' | D | 13 | 9 | 8 | " | | Running up casing 18" | 5 | 24" | 6" |
| 15 | | | | | 10 | | | | | | | |
| 14 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 1 | | 25'-27' | D | 10 | 20 | 10 | " | | | 6 | 24" | 6" |
| 16 | | | | | 10 | | | | | | | |
| 20 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 6 | | 30'-32' | D | 10 | 7 | 7 | " | | | 7 | 24" | 18" |
| 17 | | | | | 8 | | | 33' | | | | |
| 25 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 44 | | | | | | | Wet very stiff | | Gray brown SILT, some fine to coarse sand, trace fine gravel | - | 24" | 0" |
| 8 | | 35'-37' | D | 16 | 12 | 10 | " | | | 8 | 24" | 10" |
| 6 | | | | | 10 | | | | | | | |
| 16 | | 37'-39' | D | 9 | 10 | 14 | " | | | | | |
| 26 | | | | | 17 | | | | | | | |
| 39 | | | | | | | | | | | | |

GROUND SURFACE TO 60' USED HW "CASING: THEN S/S to 62'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 62'
 Rock Coring _____
 Samples 14
 HOLE NO. 8

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 8
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | | | |
|-------------------------------------|-------------|-------------------|-----------|-------------------|----------|
| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR. | Date | Time |
| | | | | START | COMPLETE |
| <u>Same as #1</u> after _____ Hours | Type | <u>Same as #1</u> | _____ | <u>Same as #1</u> | _____ |
| _____ after _____ Hours | Size I.D. | _____ | _____ | TOTAL HRS. | _____ |
| | Hammer Wt. | _____ | _____ | BORING FOREMAN | _____ |
| | Hammer Fall | _____ | _____ | INSPECTOR | _____ |
| | | | BIT | SOILS ENGR. | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From- To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 13 | | 40'-42' | D | 18 | 19 | 12 | Wet dense | | Yellow brown SILT & fine to coarse sand, trace gravel | 9 | 24" | 12" |
| 16 | | | | 22 | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 23 | | | | | | | Wet medium dense | | Running sand 42" layers of silty sand | - | 24" | 0" |
| 7 | | 45'-47' | D | 5 | 7 | 12 | Wet | | | | | |
| 10 | | | | 14 | | | very dense | | | | | |
| 12 | | 47'-49' | D | 9 | per ft. | | | 49' | | 10 | 24" | 24" |
| 15 | | (5' spoon) | | 21 | | | | | | | | |
| 14 | | 49'-50' | D | 65 | | | Wet dense | 50' | Brown F-M silty SAND & fine to crs. gravel (Shale Frags) | 11 | 12" | 12" |
| 20 | | 50'-52' | D | 19 | 21 | 9 | Wet M.dense | | | 12 | 24" | 12" |
| 21 | | | | 9 | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 32 | | | | | | | Wet very dense | | Brown fine to coarse SAND, some fine to coarse gravel trace silt | | | |
| 12 | | 55'-57' | D | 19 | 21 | 35 | | | | 13 | 24" | 18" |
| 37 | | | | 35 | | | | | | | | |
| 47 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| | | 60'-62' | D | 31 | 26 | 39 | " | 62' | | 14 | 24" | 10" |
| | | | | 19 | | | | | | | | |
| | | | | | | | | | Bottom of boring 62' | | | |

| | | | |
|---------------------------------|------------------|---|--------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: _____ | THEN: _____ |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
| D=Dry C=Cored W=Washed | Trace 0 to 10% | Cohesionless Density | Earth Boring _____ |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | Samples _____ |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |
| | | | HOLE NO. <u>8</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 9
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 PORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | | RODS - "AW" Type | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------------|-------------------|-----------------------|------------|---------|------------------------------|-----------------------------------|-------------|
| At <u>8'0"</u> | after <u>16</u> Hours | <u>50'</u> casing | | | | | Size I.D. <u>HW</u> | <u>300#</u> |
| | after _____ Hours | | Hammer Wt. <u>24"</u> | <u>30"</u> | | COMPLETE <u>3/25/71</u> | | p.m. |
| | | | | | | TOTAL HRS. _____ | BORING FOREMAN <u>E. Peterson</u> | |
| | | | | | | INSPECTOR <u>Debbie Huff</u> | | |
| | | | | | | SOILS ENGR. _____ | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | 2 | 0'-1' | D | 2 | 9 | | Dry | 1' | Brown F-M SAND & cinders | 1 | 12" | 12" |
| | 7 | 1'-2' | D | 13 | 10 | | medium dense | | Yellow brown fine to coarse SAND, some fine to coarse gravel, trace silt | 1A | 12" | 12" |
| | 27 | | | | | | | | | | | |
| | 26 | | | | | | | | | | | |
| | 15 | | | | | | " | | | | | |
| | 18 | 5'-7' | D | 10 | 6 | 7 | | | | 2 | 24" | 24" |
| | 26 | | | 12 | | | | | | | | |
| | 32 | | | | | | | | | | | |
| | 46 | | | | | | | | | | | |
| | 50 | | | | | | Wet medium dense | | | | | |
| | 20 | 10'-12' | D | 14 | 16 | 13 | | | | 3 | 24" | 18" |
| | 25 | | | 12 | | | | | | | | |
| | 21 | | | | | | | | | | | |
| | 18 | | | | | | | 14' | | | | |
| | 14 | | | | | | Wet loose | | Yellow brown fine to medium SAND, some silt, trace fine gravel (fibers). | 4 | 24" | 18" |
| | 11 | 15'-17' | D | 5 | 3 | 1 | | | | | | |
| | 13 | | | 3 | | | | | | | | |
| | 17 | | | | | | | | | | | |
| | 21 | | | | | | | | | | | |
| | 20 | | | | | | | 20' | | | | |
| | 12 | 20'-22' | D | 4 | 4 | 6 | " | | Yellow brown fine to medium SAND, trace silt | 5 | 24" | 18" |
| | 14 | | | 4 | | | | | | | | |
| | 17 | | | | | | | | | | | |
| | 20 | | | | | | | 24' | | | | |
| | 22 | | | | | | Wet medium dense | | Yellow-brown fine to coarse SAND, little fine to coarse gravel, trace silt & cobbles | 6 | 24" | 18" |
| | 19 | 25'-27' | D | 29 | 19 | 15 | | | | | | |
| | 62 | | | 12 | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 50 | | | | | | | | | | | |
| | 55 | | | | | | Wet dense | | | | | |
| | 20 | 30'-32' | D | 21 | 22 | 25 | | | | 7 | 24" | 18" |
| | 95 | | | 23 | | | | | | | | |
| | 53 | | | | | | | | | | | |
| | 33 | | | | | | | 34' | | | | |
| | 27 | | | | | | Wet medium dense | | Yellow-brown fine to medium SAND, trace silt & mica | 8 | 24" | 18" |
| | 13 | 35'-37' | D | 11 | 9 | 6 | | | | | | |
| | 20 | | | 8 | | | | | | | | |
| | 33 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |

GROUND SURFACE TO 50' USED HW "CASING: THEN S/S to 52'

| | | | | | |
|--|---|--|--|----------|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | 30+ Hard | SUMMARY: Earth Boring <u>52'</u> Rock Coring _____ Samples <u>12</u> |
|--|---|--|--|----------|---|

HOLE NO 9

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE _____

HOLE NO. 10

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Gas Tank Installation

LOCATION Providence, R.I.

PORT SENT TO above

PROJ. NO. _____

AMPLES SENT TO "

OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|------------------------|---------------|-----------|--------------------------------|------------|
| At <u>8'2"</u> | after <u>1/2</u> Hours | Rods - <u>"AW"</u> | <u>S/S</u> | _____ | START <u>3/23/71</u> | _____ a.m. |
| <u>45'</u> casing | _____ Hours | Type _____ | <u>1 3/8"</u> | _____ | COMPLETE <u>3/23/71</u> | _____ a.m. |
| _____ | after _____ Hours | Size I.D. <u>HW</u> | <u>140 #</u> | _____ | TOTAL HRS. _____ | _____ |
| | | Hammer Wt. <u>300#</u> | <u>30"</u> | BIT _____ | BORING FOREMAN <u>Peterson</u> | |
| | | Hammer Fall <u>24"</u> | | | INSPECTOR <u>Debbie Huff</u> | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 6 | 0'-2' | D | 4 | 5 | 5 | Dry medium dense | | 1 | 24" | 12" | |
| 13 | | | 7 | | | | | | | | |
| 15 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | 6' | | | | |
| 8 | | | | | | | 6.5' | concrete | | | |
| 3 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 1 | | | | | | Wet loose | | | | | |
| 2 | 10'-12' | D | 3 | 2 | 3 | | 12' | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt | - | 24" | 6 |
| 8 | | | 4 | | | | | | | | |
| 13 | 12'-14' | D | 7 | 11 | 21 | Wet M.dense | | Gray brown fine to coarse SAND, some fine to coarse gravel trace cobbles & silt | 2 | 36" | 18" |
| 18 | | | 21 | | | | | | | | |
| 19 | 14'-15' | | 75' | | | | | | | | |
| 13 | 15'-17' | D | 21 | 21 | 13 | " | | | 3 | 24" | 18" |
| 18 | | | 12 | | | | | | | | |
| 22 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 12 | 20'-22' | D | 15 | 7 | 8 | " | | | 4 | 24" | 12" |
| 16 | | | 11 | | | | | | | | |
| 18 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 11 | 25'-27' | D | 10 | 8 | 10 | " | | | 5 | 24" | 12" |
| 17 | | | 9 | | | | | | | | |
| 13 | | | | | | | | | | | |
| 35 | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| 24 | 30'-32' | D | 10 | 13 | 9 | " | | | 6 | 24" | 12" |
| 22 | | | 9 | | | | | | | | |
| 27 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 33 | | | | | | | | | | | |
| 15 | 35'-37' | D | 29 | 18 | 32 | Wet very dense | | | 7 | 24" | 12" |
| 24 | | | 29 | | | | | | | | |
| 44 | | | | | | | | | | | |
| 40 | | | | | | | | | | | |
| 38 | | | | | | | | | | | |

GROUND SURFACE TO 55' USED HW "CASING: THEN S/S to 57'

| | | | |
|---------------------------------|------------------|---|-------------------------|
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Earth Boring <u>57'</u> |
| UP=Undisturbed Piston | little 10 to 20% | Cohesive Consistency | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 0-10 Loose | Samples <u>11</u> |
| UT=Undisturbed Thinwall | and 35 to 50% | 10-30 Med. Dense | |
| | | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |

HOLE NO. 10

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 10
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 PORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | | | | |
|---------------------------|-------------------|-------------|-------------------|-----------|----------------|------------------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
| At <u>Same as #1</u> | after _____ Hours | Type | <u>Same as #1</u> | _____ | START | <u>Same as #1</u> a.m. |
| _____ | after _____ Hours | Size I.D. | _____ | _____ | COMPLETE | _____ p.m. |
| | | Hammer Wt. | _____ | _____ | TOTAL HRS. | _____ |
| | | Hammer Fall | _____ | _____ | BORING FOREMAN | _____ |
| | | | | BIT | INSPECTOR | _____ |
| | | | | | SOILS ENGR. | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|--|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 23 | | 40'-42' | D | 18 | 12 | 18 | Wet dense | Gray brown fine to coarse SAND, some fine to coarse gravel, trace silt & cobbles | 8 | 24" | 12" | |
| 32 | | | | 20 | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | |
| 47 | | | | | | | Wet very dense | | | | | |
| 38 | | 45'-47' | D | 25 | 34 | 37 | | | 9 | 24" | 18" | |
| 52 | | | | 44 | | | | | | | | |
| 95 | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |
| 73 | | 50'-52' | D | 26 | 36 | 37 | " | 10 | 24" | 18" | | |
| 75 | | | | 52 | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | |
| 115 | | 55'-57' | D | 28 | 26 | 27 | " | 11 | 24" | 18" | | |
| | | | | 27 | | | | | | | | |
| | | | | | | | | 57' | | | | |
| | | | | | | | | Bottom of boring 57' | | | | |

| | | | |
|---------------------------------|------------------|---|--------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Earth Boring _____ |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density Cohesive Consistency | Rock Coring _____ |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose 0-4 Soft 30+ Hard | Samples _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense 4-8 M/Stiff | |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense 8-15 Stiff | |
| | | 50+ Very Dense 15-30 V-Stiff | |

HOLE NO. 10

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 11
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Gas Tank Installation LOCATION Providence, R.I.
 REPORT SENT TO _____ above PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-130

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|-------------------------|---------------|-----------|--------------------------------|------------|
| At <u>8'8"</u> | after <u>1/2</u> Hours | Rods-"AW" Type _____ | <u>S/S</u> | _____ | START <u>3/26/71</u> | _____ a.m. |
| <u>55'</u> casing | | Size I.D. <u>HW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>3/26/71</u> | _____ p.m. |
| <u>7'4"</u> | after <u>1/2</u> Hours | Hammer Wt. <u>300#</u> | <u>140#</u> | _____ | TOTAL HRS. _____ | |
| No Casing | | Hammer Fall <u>24"</u> | <u>3"</u> | _____ BIT | BORING FOREMAN <u>Peterson</u> | |
| | | | | | INSPECTOR <u>Debbie Huff</u> | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 7 | | 0'-5' | D | 6 | 8 | 8 | Dry medium dense | | Brown fine to coarse SAND, cinders, little fine gravel FILL | 1 | 60" | 36" |
| 8 | | | | 8 | | | | | | | | |
| 8 | | | | 11 per Foot | | | | | | | | |
| 4 | | | | 8 | " | " | | 4' | | | | |
| 4 | | | | 5 | " | " | | | | | | |
| 5 | | 5'-7' | D | 2 | 1 | 1 | Wet loose | | Black CINDERS & ashes FILL | 2 | 24" | 24" |
| 2 | | | | 1 | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 5 | | | | | | | " | | | | | |
| - | | 10'-12' | D | 2 | 1 | 2 | " | | | 3 | 24" | 12" |
| 3 | | | | 1 | | | | 13' | | | | |
| 4 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 3 | | 15'-17' | D | 3 | 2 | 1 | " | | Gray fine to coarse SAND, little fine to coarse gravel & silt FILL | 4 | 24" | 18" |
| 2 | | | | 1 | | | | 17' | | | | |
| 2 | | 18'-19' | W | | | | | 19' | Gray ORGANIC SILT & sand | 5 | | |
| 1 | | | | | | | | | | | | |
| 5 | | | | | | | | 21' | Gray fine to coarse SAND, trace F-M gravel, T/silt | 6 | 12" | 12" |
| 6 | | 20'-21' | D | 3 | 2 | | " | | | | | |
| 3 | | 21'-22' | D | 1 | 1 | | Wet soft | | Gray ORGANIC SILT, trace fine sand | 6A | 12" | 12" |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | 25' | | | | |
| 4 | | | | | | | | | | | | |
| 10 | | 25'-27' | D | 1 | 1 | 3 | " | | Gray ORGANIC SILT, little peat, & fine to crs. sand | 7 | 24" | 24" |
| 9 | | | | 4 | | | Wet | 27' | | | | |
| 9 | | 27'-28' | D | 22 | per ft. | | M.dense | 28' | Yel. Gray F. Sd., Lit F-M Gravel & Shale Frags, trace silt | 7A | 24" | 24" |
| 22 | | | | | | | | | | | | |
| 18 | | | | | | | Wet medium dense | | | | | |
| 20 | | 30'-32' | D | 22 | 18 | 12 | | | Yellow brown fine to coarse SAND, some fine to coarse gravel, trace silt & cobbles | 8 | 24" | 12" |
| 31 | | | | 16 | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 11 | | 35'-37' | D | 8 | 8 | 9 | " | | | 9 | 24" | 12" |
| 17 | | | | 10 | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |

| | | | |
|---------------------------------|------------------|---|-------------------------|
| GROUND SURFACE TO <u>60'</u> | USED <u>HW</u> | "CASING: THEN <u>S/S to 62'</u> | |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Earth Boring <u>62'</u> |
| UP=Undisturbed Piston | little 10 to 20% | Cohesive Consistency | Rock Coring _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 0-10 Loose | Samples <u>14</u> |
| UT=Undisturbed Thinwall | and 35 to 50% | 10-30 Med. Dense | |
| | | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |
| | | | HOLE NO. <u>11</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 11

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | |
|---------------------------|------------------------------|------------------|-----------|
| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR. |
| | Same as #1 after _____ Hours | Same as #1 _____ | _____ |
| | Type | | |
| | Size I.D. | | |
| | Hammer Wt. | | BIT |
| | Hammer Fall | | |

| | |
|-------------------------|-------------------|
| Date | Time |
| START <u>Same as #1</u> | <u>_____</u> a.m. |
| COMPLETE _____ | <u>_____</u> p.m. |
| TOTAL HRS. _____ | |
| BORING FOREMAN _____ | |
| INSPECTOR _____ | |
| SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|------------------|------------------------------|--|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 18 | 40'-42' | D | 8 | 8 | 11 | Wet medium dense | | Gray fine to coarse SAND some fine to coarse gravel trace silt & cobbles | 10 | 24" | 12" | |
| 14 | | | 8 | | | | 45' | | | | | |
| 19 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 18 | 45'-47' | D | 10 | 12 | 12 | " | | Gray fine to coarse SAND, trace fine to coarse gravel & silt | 11 | 24" | 18" | |
| 21 | | | 13 | | | | 48' | | | | | |
| 25 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 27 | | | | | | | | Gray fine to coarse SAND, trace silt | | | | |
| 16 | 50'-52' | D | 6 | 8 | 9 | | 52' | | 12 | 24" | 18" | |
| 16 | | | 10 | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 65 | | | | | | Wet very dense | | Yellow brown fine to coarse SAND & fine to coarse gravel, trace silt & cobbles | 13 | 24" | 6" | |
| 28 | 55'-57' | D | 30 | 24 | 32 | | | | | | | |
| 41 | | | 28 | | | | | | | | | |
| 48 | | | | | | | | | | | | |
| 58 | | | | | | Wet dense | | | | | | |
| 60 | 60'-62' | D | 25 | 17 | 20 | | 62' | | 14 | 24" | 18" | |
| | | | 15 | | | | | | | | | |
| | | | | | | | | Bottom of boring 62' | | | | |

| | | | |
|---------------------------------|------------------|---|--------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN" _____ | SUMMARY: |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Earth Boring _____ |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Rock Coring _____ |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Samples _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |

HOLE NO. **11**

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Providence Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-20
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

| GROUND WATER OBSERVATIONS | | | | Rods - "AW" Type | CASING Size I.D. | SAMPLER Type | CORE BAR Type | Date | |
|---------------------------|-----------------|-------|-------|---------------------|---------------------|-----------------|------------------|-----------------------------------|--|
| At | after | Hours | START | | | | | Time | |
| At <u>9'</u> | after <u>48</u> | Hours | | | | <u>S/S</u> | | <u>7/22/71</u> | |
| At _____ | after _____ | Hours | | | <u>2 1/2"</u> | <u>1 3/8"</u> | | <u>7/23/71</u> | |
| | | | | | <u>300#</u> | <u>140#</u> | <u>BIT</u> | TOTAL HRS. _____ | |
| | | | | | <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>A. D'Atello</u> | |
| | | | | | | | | INSPECTOR _____ | |
| | | | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|---|-----|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Re. | | |
| 10 | 4 | 0'-2' | D | 6 | 7 | 7 | Moist medium dense | 16'0" | Gray-brown SILT & fine sand, cinder, ash, fuel odor noted, FILL | 1 | 24" | 7' | | |
| | 5 | | | 9 | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | |
| | 2 | 5'-7' | D | 3 | 1 | 1 | Moist soft | | | | Black, ashes, cinders, coal, FILL | 2 | 24" | 9' |
| | 1 | | | 2 | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 20 | 1 | 10'-12' | D | 7 | 3 | 2 | Wet soft | 25'0" | " & some organic silt | 3 | 24" | 11' | | |
| | 2 | | | 2 | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 1 | 15'-16' | D | 2 | 3 | | " | | | | | | | |
| | 2 | 16'-17' | D | 2 | 2 | | " | | | | | | | |
| | 2 | | | | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | |
| | 1 | 20'-22' | D | 2 | 3 | 2 | Wet medium stiff | | | | Gray-brown ORGANIC SILT | 5 | 24" | 12' |
| | 3 | | | 3 | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 30 | 13 | 25'-27' | D | 4 | 3 | 4 | " | 38'0" | Gray-brown ORGANIC SILT, some fine sand, trace fine gravel | 6 | 24" | 12' | | |
| | 10 | | | 3 | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | | |
| | 18 | 30'-32' | D | 18 | 20 | 14 | Wet dense | | | | Gray medium to fine SAND, little fine to medium gravel & silt | 7 | 24" | 12' |
| | 23 | | | 20 | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 40 | 24 | 35'-37' | D | 20 | 17 | 20 | " | 38'0" | Brown fine SAND, some fine gravel, little silt | 8 | 24" | 10' | | |
| | 28 | | | 15 | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | |

GROUND SURFACE TO 95' USED 2 1/2 "CASING: THEN S/S to 100'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 100'
 Rock Coring _____
 Samples 20

HOLE NO. B-20

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____
 HOLE NO. B-20
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

TO same as 1 ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|--|---|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>48</u> Hours At _____ after _____ Hours | CASING SAMPLER CORE BAR. Type <u>same as 1</u> Size I. D. _____ Hammer Wt. _____ BIT _____ Hammer Fall _____ | Date _____ Time _____ START <u>same as 1</u> o.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|--|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|--------------------------------|---|------------------------------|------|------|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. | |
| 50 | 16 | 40'-42' | D | 8 | 15 | 17 | medium dense | 45' | -lost sample | -- | 24" | 0' | |
| | 15 | | | 13 | | | | | | | | | |
| | 24 | | | | | | | | | | | | |
| | 29 | | | | | | | | | -lost water @45' | | | |
| | 29 | | | | | | | | | | | | |
| 60 | 7 | 45'-47' | D | 6 | 10 | 11 | Wet medium dense | 51'0" | Brown medium to fine running SAND, trace fine gravel | 9 | 24" | 12' | |
| | 12 | | | 16 | | | | | | | | | |
| | 22 | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | |
| | 30 | | | | | | " | | | | | | |
| | 25 | 50'-51' | D | 7 | 11 | | | | | | 10 | 12" | 6" |
| | 20 | 51'-52' | D | 12 | 12 | | Wet very stiff | | | Gray SILT, trace clay | 10A | 12" | 6" |
| | 20 | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | |
| | 26 | 55'-57' | D | 8 | 7 | 10 | " | | | | 11 | 24" | 12' |
| 70 | 26 | | | 10 | | | | 60'0" | | | | | |
| | 28 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | |
| | 35 | 60'-62' | D | 19 | 30 | 93 | Wet very dense | | | Gray fine SAND & silt layers | 12 | 24" | 12' |
| | 41 | | | 17 | | | | | | | | | |
| | 31 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 42 | 65'-67' | D | 8 | 10 | 18 | Wet dense | | | | 13 | 24" | 12' |
| 80 | 33 | | | 17 | | | | 73'0" | | | | | |
| | 33 | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | |
| | 44 | 70'-72' | D | 7 | 9 | 13 | " | | | | 14 | 24" | 12' |
| | 41 | | | 19 | | | | | | | | | |
| | 40 | | | | | | | | | | | | |
| | 52 | | | | | | | | | | | | |
| | 62 | | | | | | Wet very dense | | | Gray fine SAND, little silt | 15 | 24" | 12' |
| | 72 | 75'-77' | D | 23 | 31 | 30 | | | | | | | |
| 90 | | | 38 | | | | | | | | | | |
| 107 | | | | | | | | | | | | | |
| 109 | | | | | | | | | | | | | |
| 133 | | | | | | | | Gray running fine to med. SAND | | | | | |

| | | |
|--|--|--|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50 + Very Dense 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. <u>B-20</u> |
|--|--|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3
 DATE _____
 HOLE NO. B-20
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

TO same as 1 ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | | |
|---|---|--|---|---|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>48</u> Hours At _____ after _____ Hours | CASING <u>same as 1</u> Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | SAMPLER _____ _____ _____ _____ | CORE BAR _____ _____ _____ BIT _____ | Date _____ Time _____ START <u>same as 1</u> COMPLETE _____ TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|----------------------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | | | | | | | | | | | |
| 90 | 72 | 80'-82' | D | 11 | 13 | 20 | wet | Gray running fine to medium SAND | 1624" | 12 | | |
| | 70 | | | 29 | | | very dense | | | | | |
| | 92 | | | | | | | | | | | |
| | 135 | | | | | | | | | | | |
| | 130 | | | | | | | | | | | |
| 90 | 77 | 85'-87' | D | 8 | 8 | 9 | wet | Gray fine SAND & silt | 1724" | 12 | | |
| | 77 | | | 15 | | | medium dense | | | | | |
| | 65 | | | | | | | | | | | |
| | 69 | | | | | | | | | | | |
| | 78 | | | | | | | | | | | |
| 100 | 86 | 90'-92' | D | 5 | 8 | 8 | " | Gray fine SAND, little silt | 1824" | 13 | | |
| | 108 | | | 15 | | | | | | | | |
| | 164 | | | | | | | | | | | |
| | 120 | | | | | | | | | | | |
| | 144 | | | | | | | | | | | |
| 100 | | 95'-97' | D | 6 | 5 | 6 | " | Bottom of boring 100'0" | 1924" | 12 | | |
| | | | | 14 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | 98'-100' | D | 15 | 14 | 20 | wet dense | 100'0" | 2024" | 13 | | |
| | | | | 31 | | | | | | | | |

| | | | | |
|---|---|--|---|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50 + Very Dense | _____ Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. <u>B-20</u> |
|---|---|--|---|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

DATE _____

HOLE NO. B-21

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.00

TO Prov. Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Prop. Tank LOCATION PROVIDENCE, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| | | | | |
|--|---|--|-----------------------------|---|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>14</u> Hours Casing - <u>90'</u> At _____ after _____ Hours | Rods - " <u>AW</u> " Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>7/27/71</u> a.m. COMPLETE <u>7/28/71</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>A. D'Atello</u> INSPECTOR _____ SOILS ENGR. <u>D. Andrews</u> |
|--|---|--|-----------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--|---|------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Res. | | |
| 10 | 4 | 0'-2' | D | 6 | 7 | 7 | Moist medium dense | 10' | Brown fine SAND & fine gravel, trace cinders FILL | 1 | 24" | 12" | | |
| | 6 | | | 6 | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | |
| | 6 | 5'-7' | D | 7 | 9 | 6 | " | | 15' | Brown-gray fine SAND & fine gravel, trace brick FILL (fuel odor noted) | 2 | 24" | 7" | |
| | 8 | | | 8 | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 20 | 7 | 10'-12' | D | 8 | 8 | 5 | | Wet medium dense | 15' | Brown gray fine SAND & fine gravel (fuel odor noted) FILL | 3 | 24" | 15" |
| | | 8 | | | 7 | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 1 | | 15'-17' | D | 1 | 2 | 2 | Wet medium stiff | 31'6" | Gray ORGANIC SILT, trace shells & fine sand | | 4 | 24" | 12" | |
| 2 | | | | 3 | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | |
| 30 | | 3 | 20'-22' | D | 1 | 2 | 1 | Wet soft | 31'6" | | Gray ORGANIC SILT, some fine to medium sand | 5 | 24" | 12" |
| | 4 | | | 2 | | | | | | | | | | |
| | 3 | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 6 | 25'-27' | D | 1 | 1 | 2 | " | 34' | | Gray ORGANIC SILT, some fine to medium sand | 6 | 24" | 12" | |
| | 7 | | | 1 | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 40 | 9 | 30'-32' | D | 2 | 3 | 7 | Wet V-stiff | | 34' | Gray fine to medium SAND, some fine gravel & org.silt | 7 | 24" | 12" |
| 13 | | | | 16 | | | | | | | | | | |
| 21 | | | | | | | Moist M.dense | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 36 | | 35'-37' | D | 8 | 15 | 15 | Wet medium dense | 38' | Gray medium to coarse running SAND | | 8 | 24" | 12" | |
| 21 | | | | 14 | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |

GROUND SURFACE TO 90' USED 2 1/2 "CASING: THEN sampled

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 95'6"
 Rock Coring _____
 Samples 18

HOLE NO. B-21

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-21

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS Same as #1
 LOCATION _____
 PROJ. NO. _____
 OUR JOB NO. _____

Date _____ Time _____
 START Same as #1 a.m.
 COMPLETE _____ p.m.
 TOTAL HRS. _____
 BORING FOREMAN _____
 INSPECTOR _____
 SOILS ENGR. _____

| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR |
|--|-------------------|-------------------|-----------|
| At <u>Same as #1</u> after _____ Hours | Type _____ | <u>Same as #1</u> | _____ |
| At _____ after _____ Hours | Size I.D. _____ | _____ | _____ |
| | Hammer Wt. _____ | _____ | BIT _____ |
| | Hammer Fall _____ | _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|-------|------------------|------------------------------|--|---|--------|----------------------------|-----|-----|----|
| | | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen | Rec | | |
| 50 | 20 | 40'-42' | D | 11 | 13 | 12 | Wet dense | 44' | Gray-brown fine to coarse SAND, some fine gravel, trace silt | 9 | 24" | 12 | | |
| | 21 | | | 10 | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | |
| | 14 | 45'-47' | D | 9 | 10 | 12 | Wet M. dense | | | | Running SAND (lost sample) | | 24" | 11 |
| | 36 | | | 14 | | | | | | | | | | |
| | 51 | | | | | | | | | | | | | |
| | 48 | | | | | | | | | | | | | |
| | 49 | | | | | | | | | | | | | |
| 38 | 50'-52' | D | 9 | 18 | 12 | " | | Gray fine to coarse SAND, some fine gravel, trace silt | 10 | 24" | | 12 | | |
| 28 | | | 11 | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 60 | | | | | | Wet very dense | | | | | | | | |
| 36 | 55'-57' | D | 16 | 31 | 50 | | | | 64' | | 11 | 4" | | |
| 41 | | | 33 | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | |
| 67 | | | | | | Wet medium dense | | | | | | | | |
| 36 | 60'-62' | D | 7 | 12 | 14 | | | 67' | | | 12 | 24" | | |
| 33 | | | 15 | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | 65'-67' | D | 10 | 12 | 18 | Wet dense | | | 73' | | 13 | 24" | | |
| 45 | | | 18 | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | |
| 48 | | | | | | Wet very dense | | | | | | | | |
| 42 | 70'-72' | D | 10 | 20 | 18 | | | 73' | | | 14 | 24" | | |
| 60 | | | 27 | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 47 | 75'-77' | D | 5 | 8 | 10 | Wet dense | | | 73' | | 15 | 24" | | |
| 38 | | | 15 | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. B-21

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 of 3

DATE _____

HOLE NO. B-21

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-297

| | | | |
|--|---|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>Same as #1</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>Type <u>Same as #1</u></p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p>SAMPLER _____</p> <p>CORE BAR _____</p> <p>BIT _____</p> | <p>Date <u>Same as #1</u> Time _____</p> <p>START _____</p> <p>COMPLETE _____</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 80' | 54 | 80'-82' | D | 6 | 14 | 22 | Wet dense | 82' | Gray medium to coarse SAND some fine gravel (running) | 16 | 24 | 12' |
| | 57 | | | 21 | | | | | | | | |
| | 78 | | | | | | | | | | | |
| | 105 | | | | | | | | | | | |
| | 90 | | | | | | | | | | | |
| 85' | 57 | 85'-87' | D | 8 | 10 | 15 | Wet dense | 89' | Gray fine SAND, little silt (running sand) | 17 | 24 | 12' |
| | 81 | | | 21 | | | | | | | | |
| | 92 | | | | | | | | | | | |
| | 111 | | | | | | | | | | | |
| | 90 | | | | | | | | | | | |
| 90' | | 90'-92' | D | 9 | 16 | 24 | Wet very dense | 96'6" | Gray-brown fine to medium SAND, trace silt | 18 | 24 | 15' |
| | | | | 29 | | | | | | | | |
| | | | | | | | | | | | | |
| | | 95'-96'6" | D** | 12 | 18 | 22 | Wet dense | | | | | |
| | | | | | | | | | | | | |
| 100' | | | | | | | | | Bottom of boring 96'6" | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|--|---|----------------------|----------------------|------------|--------------------|------------------|-------------|-------------|------------|----------------|---------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | | | | | | | | | | |
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <table border="0" style="width: 100%;"> <tr> <td>Cohesionless Density</td> <td>Cohesive Consistency</td> </tr> <tr> <td>0-10 Loose</td> <td>0-4 Soft 30 + Hard</td> </tr> <tr> <td>10-30 Med. Dense</td> <td>4-8 M/Stiff</td> </tr> <tr> <td>30-50 Dense</td> <td>8-15 Stiff</td> </tr> <tr> <td>50+ Very Dense</td> <td>15-30 V-Stiff</td> </tr> </table> | Cohesionless Density | Cohesive Consistency | 0-10 Loose | 0-4 Soft 30 + Hard | 10-30 Med. Dense | 4-8 M/Stiff | 30-50 Dense | 8-15 Stiff | 50+ Very Dense | 15-30 V-Stiff |
| Cohesionless Density | Cohesive Consistency | | | | | | | | | | | |
| 0-10 Loose | 0-4 Soft 30 + Hard | | | | | | | | | | | |
| 10-30 Med. Dense | 4-8 M/Stiff | | | | | | | | | | | |
| 30-50 Dense | 8-15 Stiff | | | | | | | | | | | |
| 50+ Very Dense | 15-30 V-Stiff | | | | | | | | | | | |
| | | <p>SUMMARY:</p> <p>Earth Boring _____</p> <p>Rock Coring _____</p> <p>Samples _____</p> <p style="text-align: right;">HOLE NO. B-21</p> | | | | | | | | | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE _____

HOLE NO. B-22

LINE & STA. _____

OFFSET _____

SURF. ELEV. 8.00

TO Providence Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | | RODS - "AW" | CASING | SAMPLER | CORE BAR. | Date | |
|---------------------------|------------------|-------|------|------------------------|---------------|---------------|-----------|----------------|------|
| At | after | Hours | Type | | | | | START | Time |
| At <u>9'2"</u> | after <u>1/2</u> | Hours | | Size: D. <u>2 1/2"</u> | <u>2 1/2"</u> | <u>S/S</u> | | <u>7/26/71</u> | |
| | | | | Hammer Wt. <u>300#</u> | <u>300#</u> | <u>1 3/8"</u> | | <u>7/27/71</u> | |
| At <u>9'</u> | after <u>3/4</u> | Hours | | Hammer Fall <u>24"</u> | <u>24"</u> | <u>30"</u> | BIT | | |
| | | | | | | | | | |

TOTAL HRS. _____
 BORING FOREMAN A. D'Alfello
 INSPECTOR _____
 SOILS ENGR. D. Andrews

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|---|------|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen. | Rec. | |
| 10 | 1 | 0'-2' | D | 4 | 5 | 4 | Moist loose | 15'0" | Black COAL & ash - FILL | 1 | 24" | 17" | |
| | 3 | | | 2 | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 20 | 1 | 5'-7' | D | 3 | 3 | 2 | " | 18'0" | Brown fine SAND & coal FILL (fuel odor noted) | 2 | 24" | 9" | |
| | 2 | | | 3 | | | | | | | | | |
| | 12 | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| 30 | 1 | 10'-12' | D | 1 | 1 | 1 | Wet loose | 23' | Brown fine SAND & fine gravel FILL (fuel odor noted) | 3 | 24" | 11" | |
| | 1 | | | 3 | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| | 1 | 15'-17' | D | 1 | 2 | 2 | Wet medium stiff | | | | Black ORGANIC SILT, some fine sand, trace fine gravel | 4 | 24" |
| 40 | 1 | | | 3 | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 3 | 20'-22' | D | 2 | 2 | 3 | Wet soft | | Dark gray ORGANIC SILT & fine sand | 5 | 24" | 12" | |
| | 4 | | | 5 | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 40 | 18 | 25'-27' | D | 4 | 5 | 8 | Wet medium dense | | Gray medium to coarse SAND, some fine to medium gravel little organic silt | 6 | 24" | 12" | |
| | 17 | | | 12 | | | | | | | | | |
| | 21 | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | |
| 40 | 9 | 30'-32' | D | 6 | 4 | 3 | Wet loose | 31' | Dark gray ORGANIC SILT, trace shells | 7 | 24" | 10" | |
| | 11 | | | 4 | | | | | | | | | |
| | 12 | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | |
| | 13 | 35'-37' | D | 1 | 2 | 2 | Wet medium stiff | | | | 8 | 24" | 12" |

GROUND SURFACE TO 70' USED 2 1/2 "CASING: THEN S/S to 72'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

SUMMARY:
 Earth Boring 72'
 Rock Coring _____
 Samples 15

HOLE NO. B-22

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. B-22
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>Same as #1</u> CORE BAR _____ Type _____ Size I.D. _____ Hammer Wt. _____ BIT _____ Hammer Fall _____ | Date <u>Same as #1</u> Time _____ START _____ COMPLETE _____ TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--|-----|-----|----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| | | | | | | | | | | | | | |
| 50 | 26 | 40'-42' | D | 2 | 3 | 3 | Wet | 42' | Dark gray ORGANIC SILT trace shells | 9 | 24" | 12 | |
| | 25 | | | 20 | | | V-stiff | | | | | | |
| | 34 | | | | | | | | | | | | |
| | 47 | | | | | | | | | | | | |
| | 34 | | | | | | Wet dense | 49' | Brown medium to fine SAND | | | | |
| | 57 | 45'-47' | D | 16 | 15 | 12 | | | | | 10 | 24" | 13 |
| | 29 | | | 15 | | | | | | | | | |
| | 28 | | | | | | | | | | | | |
| | 60 | 35 | | | | | | | | | | | |
| | | 39 | | | | | | Wet medium dense | 59' | Brown fine to coarse SAND, some fine to medium gravel & silt | | | |
| 21 | | 50'-52' | D | 18 | 17 | 15 | | | | | 11 | 24" | 13 |
| 32 | | | | 14 | | | | | | | | | |
| 39 | | | | | | | | | | | | | |
| 41 | | | | | | | Wet medium dense | | Brown fine to coarse SAND, some fine to medium gravel little silt | | | | |
| 48 | | | | | | | | | | | | | |
| 40 | | 55'-57' | D | 7 | 12 | 13 | | | | 12 | 24" | 11 | |
| 34 | | | | 14 | | | | | | | | | |
| 70 | | 49 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | | |
| | 47 | | | | | | Wet very dense | 63' | Gray-brown fine to coarse SAND; some medium to fine gravel & silt | | | | |
| | 56 | 60'-62' | D | 19 | 28 | 30 | | | | | 13 | 24" | 10 |
| | 64 | | | 24 | | | | | | | | | |
| | 43 | | | | | | | | | | | | |
| | 39 | | | | | | Wet dense | 67' | Brown medium to coarse running SAND, little fine gravel | | | | |
| | 48 | | | | | | | | | | | | |
| | 39 | 65'-67' | D | 11 | 22 | 24 | | | | | 14 | 24" | 10 |
| | 49 | | | 22 | | | | | | | | | |
| 75 | 52 | | | | | | | 69' | Dk. gray F-H SAND, some silt & fine gravel | | | | |
| | 63 | | | | | | | | | | | | |
| | 71 | | | | | | | 72' | Gray-brown fine to coarse SAND, little silt, trace fine gravel | 15 | 24" | 11 | |
| | | 70'-72' | D | 11 | 17 | 20 | | | | | | | |
| | | | 20 | | | | | | Bottom of boring 72' | | | | |

GROUND SURFACE TO 70' USED 2 1/2 "CASING: THEN S/S to 72'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 72
 Rock Coring _____
 Samples 15

HOLE NO. B-22

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-23
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.50

TO Providence Gas Co., -Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | | RODS-"AW" Type | CASING | SAMPLER | CORE BAR | Date | | Time |
|---------------------------|--|-----------------|-------------|-------------------------|--------|---------------|----------|----------------|----------|------------|
| At | | after | min. | | | | | START | COMPLETE | |
| At <u>7'8"</u> | | after <u>10</u> | <u>min.</u> | | | <u>S/S</u> | | <u>7/21/71</u> | | <u>0.7</u> |
| | | | <u>hrs</u> | Size I.D. <u>2 1/2"</u> | | <u>1 3/8"</u> | | | | <u>0.7</u> |
| At _____ | | after _____ | Hours | Hammer Wt. <u>300#</u> | | <u>140#</u> | BIT | | | |
| | | | | Hammer Fall <u>24"</u> | | <u>30"</u> | | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------------|------------------------------|--|---|---|--|-----|--|---|-----|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | | | | | |
| 10 | 5 | 0'-2' | D | 2 | 4 | 7 | Moist medium dense | 18' | Gray-black fine to coarse SAND, coal, ashes FILL | 1 | 24" | 9" | | | | | |
| | 7 | | | 9 | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | | |
| | 5 | 5'-7' | D | 6 | 6 | 5 | " | | | 18' | Gray medium to coarse SAND, trace silt & fine to medium gravel | 2 | 24" | 10" | | | |
| | 7 | | | 5 | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | |
| | 3 | 10'-12' | D | 5 | 5 | 7 | " | | | | | 18' | Gray SILT & medium to coarse sand, some fine to medium gravel | 3 | 24" | 8" | |
| | 6 | | | 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | |
| 9 | 15'-17' | D | 4 | 4 | 3 | Moist loose | 18' | Brown fine to coarse SAND some fine to medium gravel little silt | 4 | | | | | 24" | 6" | | |
| 12 | | | 6 | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | |
| 20 | 26 | 20'-22' | D | 9 | 13 | 13 | | | Wet medium dense | 26' | Gray-brown coarse to fine SAND & gravel | | | 5 | 24" | 10" | |
| | 13 | | | 16 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | |
| | 11 | 25'-27' | D | 5 | 14 | 12 | | | Wet dense | | | 26' | Brown fine to coarse SAND some fine to medium gravel little silt | 6 | 24" | 7" | |
| | 18 | | | 16 | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | | | | |
| | 30 | 30 | | | | | | | | | | | | | | | |
| | | 7 | 30'-32' | D | 7 | 9 | 12 | Wet medium dense | 33'6" | | | | | Gray-brown coarse to fine SAND & gravel | 7 | 24" | 10" |
| | | 11 | | | 16 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | |
| 10 | | 35'-37' | D | 8 | 8 | 8 | " | 33'6" | | Gray-brown coarse to fine SAND & gravel | 8 | | | | 24" | 4" | |
| 16 | | | | 8 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | |
| 40 | | 18 | | | | | | | | | | | | | | | |

| | | | |
|---------------------------------|--|---|---|
| GROUND SURFACE TO <u>70'</u> | USED <u>2 1/2"</u> CASING: THEN <u>spoon</u> | 140lb Wt. x 30" fall on 2" O.D. Sampler | SUMMARY: Earth Boring <u>86'6"</u> Rock Coring _____ Samples <u>16</u> |
| Sample Type | Proportions Used | Cohesionless Density | Cohesive Consistency |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 Loose | 0-4 Soft 30+ Hard |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | 4-8 M/Stiff |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | 8-15 Stiff |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | 15-30 V-Stiff |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-23

LINE & STA. _____

OFFSET _____

SURF. ELEV. 7.50

TO Same as #1
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS Same as #1
 LOCATION _____
 PROJ. NO. _____
 OUR JOB NO. _____

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>Same as #1</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>Same as #1</u> CORE BAR _____ Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | Date _____ Time _____ START <u>Same as #1</u> COMPLETE _____ TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------------------|----------|------------------------------|---------------------|---|--------|-----|-----|----|-----|-----|
| | | | | From C-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | | | |
| 50 | 13 | 40'-42' | D | 12 | 10 | 9 | Wet medium dense | 50' | No Recovery Gray-brown coarse to fine SAND & gravel | - | 24" | 0" | | | |
| | 12 | | | 8 | | | | | | | | | | | |
| | 9 | 42'-44' | D | 8 | 11 | 10 | | | | | | | - | 24" | 0" |
| | 11 | | | 11 | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | |
| | 24 | 45'-47' | D | 7 | 9 | 11 | | | | | | | 9 | 24" | 10" |
| | 28 | | | 11 | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | |
| | 41 | | | | | | | | | | | | | | |
| 60 | 33 | 50'-52' | D | 50 | 70 | 41 | Moist very dense | 54' | Brown fine to medium SAND | 10 | 24" | 9" | | | |
| | 43 | | | 47 | | | | | | | | | | | |
| | 68 | | | | | | | | | | | | | | |
| | 65 | | | | | | | | | | | | | | |
| | 65 | | | | | | | | | | | | | | |
| | 36 | 55'-57' | D | 12 | 29 | 33 | | | | | | | 11 | 24" | 9" |
| | 53 | | | 48 | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | |
| | 58 | | | | | | | | | | | | | | |
| | 61 | | | | | | | | | | | | | | |
| 70 | 57 | 60'-62' | D | 16 | 27 | 34 | " | 64' | Brown fine to coarse SAND & silt, some fine to medium gravel | 12 | 24" | 6" | | | |
| | 52 | | | 41 | | | | | | | | | | | |
| | 64 | | | | | | | | | | | | | | |
| | 72 | | | | | | | | | | | | | | |
| | 105 | | | | | | | | | | | | | | |
| | 93 | 65'-67' | D | 30 | 31 | 30 | | | | | | | 13 | 24" | 15" |
| | 109 | | | 34 | | | | | | | | | | | |
| | 130 | | | | | | | | | | | | | | |
| | 143 | | | | | | | | | | | | | | |
| | 100 | | | | | | | | | | | | | | |
| 80 | | 70'-72' | D | 26 | 48 | 59 | " | 79' | Gray fine to medium SAND some silt, trace fine to medium gravel | 14 | 24" | 7" | | | |
| | | | | 72 | | | | | | | | | | | |
| | | 75'-77' | D | 51 | 63 | 59 | | | | | | | - | 24" | 0" |
| | | | | 47 | (140# - 300# wt) | | | | | | | | | | |
| | 77'6"-79'6" | D | 15 | 118 | 68 | Moist | | | Gray-br. F-C SAND & silt, some F-M gravel TILL | - | 24" | 0" | | | |
| | | | | | | V.dense | | | | | | | | | |

GROUND SURFACE TO _____
 Sample Type _____
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

USED _____ "CASING: THEN _____
 Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%
 140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____
HOLE NO. B-23

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Prov. Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Prop. Tank LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-24
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

| GROUND WATER OBSERVATIONS | | | | Rods-"AW" | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|------------------|-------|-------------|---------------|---------------|---------|----------|--------------------------------|------|
| At <u>6'-7"</u> | after <u>1/6</u> | Hours | Type | <u>S/S</u> | | | | START <u>7/26/71</u> | |
| At _____ | after _____ | Hours | Size I.D. | <u>2 1/2"</u> | <u>1 3/8"</u> | | | COMPLETE <u>7/28/71</u> | |
| | | | Hammer Wt. | <u>300#</u> | <u>140#</u> | | | TOTAL HRS. _____ | |
| | | | Hammer Fall | <u>24"</u> | <u>30"</u> | | | BORING FOREMAN <u>A. Geros</u> | |
| | | | | | | | | INSPECTOR <u>D. Andrews</u> | |
| | | | | | | | | SOILS ENGR. <u>D. Andrews</u> | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Per | Ret. | | |
| 10 | 36 | 0'-2' | D | 12 | 9 | 9 | Dry medium dense | 7'0" | Brown fine sand, cinders, brick, FILL | 1 | 24" | 8" | | |
| | 31 | | | 6 | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 9 | 5'-7' | D | 6 | 6 | 7 | " | | | | | 2 | 24" | 10" |
| | 7 | | | 4 | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | |
| | 1 | | | | | | Wet soft | | | | | | | |
| 20 | 6 | 10'-12' | D | 1 | 1 | 1 | " | 18'0" | Gray ORGANIC SILT | 3 | 24" | 8" | | |
| | 1 | | | | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | |
| | 6 | 15'-17' | D | 2 | 1 | 1 | " | | | | | 4 | 24" | 9" |
| | 2 | | | 1 | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | |
| 30 | 13 | 20'-22' | D | 12 | 13 | 18 | Wet dense | 28'0" | Gray medium to coarse SAND & fine to medium gravel, little silt | 5 | 24" | 8" | | |
| | 20 | | | 13 | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | |
| | 17 | | | | | | Wet medium dense | | | | | | | |
| | 16 | 25'-27' | D | 10 | 10 | 11 | " | | | | | 6 | 24" | 7" |
| | 14 | | | 12 | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | |
| | 20 | | | | | | Wet very stiff | | | | | | | |
| 40 | 13 | 30'-32' | D | 8 | 12 | 14 | " | 38'0" | Gray-brown SILT | 7 | 24" | 10" | | |
| | 24 | | | 11 | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | |
| | 42 | | | | | | | | | | | | | |
| | 43 | | | | | | | | | | | | | |
| | 27 | 35'-37' | D | 8 | 17 | 21 | Wet hard | | | | | 8 | 24" | 10" |
| | 41 | | | 20 | | | | | | | | | | |
| | 47 | | | | | | | | | | | | | |
| | 60 | | | | | | | | | | | | | |
| | 63 | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 83'
 Rock Coring _____
 Samples 18
 HOLE NO. B-24

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3
 DATE _____
 HOLE NO. B-24
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.0'

TO same as 1 ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|-------------------|------------------|----------|-----------|---------------------------|------|
| At <u>6'7"</u> | after <u>1/6</u> Hours | Type _____ | <u>same as 1</u> | <u>1</u> | _____ | START _____ | a.m. |
| At _____ | after _____ Hours | Size I. D. _____ | _____ | _____ | _____ | COMPLETE <u>same as 1</u> | p.m. |
| | | Hammer Wt. _____ | _____ | _____ | _____ | TOTAL HRS. _____ | |
| | | Hammer Fall _____ | _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | _____ | _____ | _____ | INSPECTOR _____ | |
| | | | _____ | _____ | _____ | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 50 | 31 | 40'-42' | D | 10 | 19 | 23 | Moist hard | Gray SILT | 9 | 24" | 9" | |
| | 46 | | | 24 | | | | | | | | |
| | 66 | | | | | | | | | | | |
| | 77 | | | | | | | | | | | |
| | 76 | | | | | | | | | | | |
| | 55 | 45'-47' | D | 14 | 16 | 18 | " | | 10 | 24" | 9" | |
| | 66 | | | 30 | | | | | | | | |
| | 104 | | | | | | | | | | | |
| | 138 | | | | | | | | | | | |
| | 158 | | | | | | | | | | | |
| 60 | 128 | 50'-52' | D | 9 | 11 | 10 | moist very stiff | TILL- gray fine SAND, some silt, little fine gravel | 11 | 24" | 10" | |
| | | | | 14 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | 55'-57' | D | 10 | 9 | 20 | Moist hard | | 12 | 24" | 9" | |
| | | | | 22 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 70 | | 60'-62' | D | 8 | 10 | 12 | " | | 13 | 24" | 10" | |
| | | | | 38 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | 65'-66'6" | D | 18 | 35 | 44 | " | | 14 | 18" | 12" | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 70'-72' | D | 20 | 37 | 50 | " | | 15 | 18" | 9" | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | 75'-77' | D | 20 | 27 | 22 | " | | 16 | 24" | 8" | |
| | | | | 26 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. B-24

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-25
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

TO Prov. Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Prop. Tank LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| | | | | |
|---|--|--|-----------------------------|--|
| GROUND WATER OBSERVATIONS At <u>7'3"</u> after <u>10</u> <small>min.</small> At _____ after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date <u>7/28/71</u> Time _____ START <u>7/28/71</u> COMPLETE <u>7/28/71</u> TOTAL HRS. _____ BORING FOREMAN <u>Gones</u> INSPECTOR _____ SOILS ENGR. _____ |
|---|--|--|-----------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Brows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc. | SAMPLE | | | | | | |
|-------|--------------------------------|-------------------------------|----------------------|----------------------------|------|----------------|---------------------------------------|---|---|---|--|------|-----|----|-----|----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Ret. | | | | |
| 10 | 9 | 0'-2' | D | 12 | 6 | 4 | Dry loose | 2' | Gray fine to medium SAND, gravel & coal FILL | 1 | 24" | 10 | | | | |
| | 12 | | | 4 | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | |
| 20 | | 5'-7' | D | 40 | 19 | 15 | Moist dense | 10' | Brown fine to medium SAND little silt & fine gravel FILL | 2 | 24" | 10 | | | | |
| | | | | 21 | | | | | | | | | | | | |
| | 1 | 10'-12' | D | 3 | 3 | 5 | Wet loose | | | 20' | Gray fine SAND & silt, some fine to medium gravel FILL | 3 | 24" | 7" | | |
| | 5 | | | 3 | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| | 3 | 15'-17' | D | 7 | 9 | 8 | " | | | | | | | 4 | 24" | 9" |
| | 5 | | | 4 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 11 | 20'-22' | D | 4 | 4 | 3 | Wet M.stiff | 23' | Gray ORGANIC SILT, little F-M sand & fine gravel | 5 | | | 24" | 7" | | | |
| 20 | | | 4 | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | | |
| 14 | 25'-27' | D | 12 | 14 | 21 | Moist dense | | | 37'6" | Gray-brown fine to medium SAND & gravel, some silt | 6 | 24" | 12" | | | |
| 26 | | | 19 | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | | |
| 14 | 30'-32' | D | 40 | 24 | 14 | " | | Gray-brown fine to medium SAND, some silt & fine gravel | | | 7 | 24" | 9" | | | |
| 40 | | | 20 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |
| 22 | 35'-37' | D | 20 | 21 | 28 | " | | | Lost sample | - | 24" | 0" | | | | |
| 34 | | | 21 | | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | | | | | |
| 74 | 37'-33'6" | D | 33 | 40 | 40 | Moist hard | | | | Gray-brown SILT, little fine sand | 8 | 18" | 10" | | | |
| 80 | | | | | | | | | | | | | | | | |

GROUND SURFACE TO 45' USED 2 1/2 "CASING: THEN sampled to 29'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 99'
 Rock Coring _____
 Samples 20

HOLE NO. B-25

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-25

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO Same as #1

ADDRESS Same as #1

PROJECT NAME _____

LOCATION _____

REPORT SENT TO _____

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. 71-297

| | | | | | | |
|--|------------------------|--------|---------|-----------|-------------------------|------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
| At <u>Same as #1</u> after _____ Hours | Type <u>Same as #1</u> | | | | START <u>Same as #1</u> | a.m. |
| At _____ after _____ Hours | Size I.D. _____ | | | | COMPLETE _____ | p.m. |
| | Hammer Wt. _____ | | | | TOTAL HRS. _____ | |
| | Hammer Fall _____ | | | BIT _____ | BORING FOREMAN _____ | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|----------------------------|---|--------|------|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| | | | | | | | | | | | | |
| 50 | 32 | 40'-42' | D | 14 | 23 | 25 | Moist hard | Gray SILT, trace fine sand | 9 | 18" | - | |
| | 54 | | | 33 | | | | | | | | |
| | 78 | | | | | | | | | | | |
| | 89 | | | | | | | | | | | |
| | 73 | | | | | | | | | | | |
| 60 | | 45'-47' | D | 14 | 33 | 29 | " | Gray SILT | 10 | 24" | 14' | |
| | | | | 38 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 70 | | 50'-52' | D | 7 | 8 | 8 | Moist stiff | | 11 | 24" | 10' | |
| | | | | 7 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 55'-57' | D | 13 | 18 | 22 | Moist hard | | 12 | 24" | 9" | |
| | | | | 27 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 60'-62' | D | 13 | 14 | 20 | " | | 13 | 24" | 10' | |
| | | | | 23 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 65'-67' | D | 5 | 11 | 13 | Moist very stiff | | 14 | 24" | 9" | |
| | | | | 12 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 70'-72' | D | 12 | 14 | 13 | " | | 15 | 24" | 10' | |
| | | | | 16 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | 75'-77' | D | 12 | 14 | 20 | Moist hard | | 16 | 24" | 10' | |
| | | | | 31 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | |
|--|---|---|
| GROUND SURFACE TO _____ | USED _____ "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | HOLE NO B-25 |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3
 DATE _____
 HOLE NO. B-25
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO same as #1 ADDRESS same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>same as #1</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>same as #1</u> CORE BAR _____ Type _____ Size I D. _____ Hammer Wt. _____ Hammer Fall _____ | Date <u>Same as #1</u> Time _____ START _____ a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|----------------------|---|--------|------|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| 90 | | 80'-82' | D | 7 | 11 | 14 | Moist hard | 85' | Gray SILT, trace fine sand | 17 | 24" | 13" |
| | | | | 26 | | | | | | | | |
| | | 85'-87' | D | 152 | 83 | 70 | Moist very dense | | Gray fine to medium SAND, some silt & fine to medium gravel TILL | 18 | 24" | 9" |
| | | | | 60 | | | | | | | | |
| | | 90'-92' | D | 30 | 29 | 28 | " | | Gray fine to medium SAND, little silt, trace fine gravel TILL | 19 | 24" | 10" |
| 100 | | | | 29 | | | | | | | | |
| | | 95'-97' | D | 40 | 24 | 14 | Moist dense | Lost sample TILL | - | 24" | 0" | |
| | | | | 20 | | | | | | | | |
| | 97'-99' | D | 32 | 31 | 27 | " | 99' | | 20 | 24" | 10" | |
| | | | | 19 | | | | | | | | |
| | | | | | | | | Bottom of boring 99' | | | | |

| | | | |
|---|---|---|---|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | THEN _____ Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| TOWN PRESS - EAST PROV. | | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. B-25 |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-26
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.50

TO Prov. Gas Co. - Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| | | | | |
|--|---|--|-----------------------------|---|
| GROUND WATER OBSERVATIONS At <u>12'</u> after <u>16</u> Hours At _____ after _____ Hours | Rods - "AW" Type _____ Size I. D. <u>2 1/2"</u> Hemmer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>7/27/71</u> c.m. p.m. COMPLETE <u>7/29/71</u> TOTAL HRS. _____ BORING FOREMAN <u>H. Manco</u> INSPECTOR <u>D. Andrews</u> SOILS ENGR. <u>D. Andrews</u> |
|--|---|--|-----------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|------|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| 10 | 3 | 0'-2' | D | 6 | 14 | 18 | Dry dense | 5'0" | Brown fine SAND & coal, ash brick, FILL | 1 | 24" | 24 |
| | 6 | | | 15 | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 12 | | | | | | | | | | | |
| 20 | 6 | 5'-7' | D | 10 | 13 | 13 | " | 10' | Brown fine SAND, FILL | 2 | 24" | 20 |
| | 9 | | | 17 | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 11 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| 30 | 2 | 10'-12' | D | 2 | 3 | 4 | Moist loose | 19'0" | Gray-brown fine to medium SAND, some fine gravel, little silt, FILL | 3 | 24" | 20 |
| | 2 | | | 4 | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 7 | | | | | | wet medium dense | | | | | |
| 40 | 4 | 15'-17' | D | 6 | 5 | 8 | Moist medium stiff | 23'0" | gray fine SAND, some silt, FILL | 4 | 24" | 23 |
| | 4 | | | 10 | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| 30 | 4 | 20'-22' | D | 2 | 2 | 2 | Wet loose | 30'0" | Dark gray ORGANIC SILT, little fine sand | 5 | 24" | 24 |
| | 8 | | | 2 | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | |
| | 40 | 25'-27' | D | 2 | 4 | 3 | | | | | | |
| 30 | 30 | | | 4 | | | Moist very stiff | 34'0" | Dark gray fine to medium SAND, some organic silt | 6 | 24" | 24 |
| | 25 | | | | | | | | | | | |
| | 49 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |
| | 17 | 30'-32' | D | 13 | 9 | 9 | | | | | | |
| 40 | 17 | | | 12 | | | Moist dense | | Gray-brown SILT, trace fine sand | 7 | 24" | 12 |
| | 20 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |
| | 41 | | | | | | | | | | | |
| | 30 | 35'-37' | D | 13 | 17 | 19 | | | | | | |
| 40 | 51 | | | 22 | | | | | | | | |
| | 57 | | | | | | | | | | | |
| | 52 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | |

GROUND SURFACE TO 90' USED 2 1/2 "CASING: THEN S/S & o.e. rod to 96'3"

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff
 30+ Hard

SUMMARY:
 Earth Boring 56'3"
 Rock Coring _____
 Samples 20

HOLE NO. B-26

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-26

LINE & STA. _____

OFFSET _____

SURF. ELEV. 8.50

TO: same as 1 ADDRESS: same as 1
 PROJECT NAME: _____ LOCATION: _____
 REPORT SENT TO: _____ PROJ. NO. _____
 SAMPLES SENT TO: _____ OUR JOB NO. _____

| | | |
|---|---|---|
| <p>GROUND WATER OBSERVATIONS</p> <p>At <u>same as 1</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING SAMPLER CORE BAR</p> <p>Type <u>same as 1</u></p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p>START <u>same as 1</u> o.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|---|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|--------------------|------------------------------|--|---|---------------------------------|-----------------|------|-----|-----|--|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Res. | | | |
| 50 | 22 | 40'-42' | D | 23 | 16 | 19 | Wet dense | 44'0" | Brown fine to coarse SAND, & gravel, some silt | 9 | 24' | 18' | | | |
| | 32 | | | 25 | | | | | | | | | | | |
| | 62 | | | | | | | | | | | | | | |
| | 63 | | | | | | | | | | | | | | |
| | 59 | | | | | | | | | | | | | | |
| | 17 | 45'-47' | D | 9 | 11 | 14 | Moist hard | | | 54'0" | Gray-brown SILT | 10 | 24' | 24' | |
| | 17 | | | 19 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | |
| 31 | 50'-52' | D | 13 | 15 | 14 | " | 59'6" | @ 50' becomes gray | 11 | | | 24' | 24' | | |
| 31 | | | 15 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | | |
| 41 | 55'-57' | D | 12 | 19 | 22 | Moist dense | | | 75'0" | Gray SILT, some fine sand | 12 | 24' | 24' | | |
| 41 | | | 24 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | | | | |
| 33 | 60'-62' | D | 21 | 21 | 25 | Moist dense | 75'0" | Gray SILT, trace fine sand | | | 13 | 24' | 24' | | |
| 50 | | | 33 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | | |
| 44 | 65'-67' | D | 36 | 28 | 31 | " | | | 75'0" | Gray-brown SILT, some fine sand | 14 | 24' | 24' | | |
| 45 | | | 33 | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | |
| 39 | 70'-72' | D | 26 | 24 | 26 | " | 75'0" | Brown-gray fine SAND w/ layers of silt | | | 15 | 24' | 24' | | |
| 52 | | | 32 | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | |
| 31 | 75'-77' | D | 17 | 14 | 14 | Moist medium dense | | | 80' | | 16 | 24' | 24' | | |
| 46 | | | 12 | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | | | | |

| | | | |
|--|--|---|--|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>"CASING: THEN _____</p> <p>140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> <p style="text-align: right;">HOLE NO. B-26</p> |
|--|--|---|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. B-26

LINE & STA. _____

OFFSET _____

SURF. ELEV. 8.50

TO _____ ADDRESS _____
 PROJECT NAME same as 1 LOCATION _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

PROJ. NO. _____
 OUR JOB NO. _____

| | | |
|---|--|---|
| <p>GROUND WATER OBSERVATIONS</p> <p>At <u>same as 1</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>SAMPLER <u>same as 1</u></p> <p>Core Bar _____</p> <p>BIT _____</p> | <p>Date _____ Time _____</p> <p>START <u>same as 1</u> a.m. p.m. s.m.</p> <p>COMPLETE _____</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|---|--|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| 90 | 46 | 80'-82' | D | 19 | 15 | 13 | Moist medium dense | 90' | Gray fine to coarse SAND & gravel, some silt | 17 | 24" | 24" | |
| | 65 | | | 11 | | | | | | | | | |
| | 67 | | | | | | | | | | | | |
| | 70 | | | | | | | | | | | | |
| | 77 | | | | | | | | | | | | |
| 90 | 35 | 85'-87' | D | 8 | 17 | 38 | Wet very dense | 90' | Gray medium to coarse SAND & fine gravel | 18 | 24" | 24" | |
| | 65 | | | 23 | | | | | | | | | |
| | 71 | | | | | | | | | | | | |
| | 57 | | | | | | | | | | | | |
| 95 | | 90'-92' | D | 3 | 5 | 8 | Moist medium dense | 95'0" | Gray medium to fine running SAND, trace silt | 19 | 24" | 12 | |
| | | | | 15 | | | | | | | | | |
| 95 | | 95'-96'3" | D** | 26 | 87 | 100/3 | moist | 96'3" | TILL-gray F-M SAND, some fine to medium gravel, little silt Bottom of boring 96'3" | 20 | 15" | -- | |
| | | | | | | | | | | | | | |

D** denotes used
 300# wt on open end
 AW rod sampler

| | | | |
|--|--|---|---|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____ "CASING: THEN _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> |
|--|--|---|---|

HOLE NO. **B-26**

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE _____
 HOLE NO. B-27
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.50'

TO Providence Gas Co. -Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION PROVIDENCE, RI
 REPORT SENT TO above PROJ. NO. _____
 COPIES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | | Rods-AW | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|------------------------|--|--|-------------------------|--------|---------------|----------|--------------------------------|------|
| <u>9'8"</u> | after <u>1/4</u> Hours | | | Type _____ | | <u>S/S</u> | | START <u>7/26/71</u> | a.m. |
| <u>cas. @40'</u> | | | | Size I.D. <u>2-1/2"</u> | | <u>1-3/8"</u> | | COMPLETE <u>7/27/71</u> | p.m. |
| <u>10'</u> | after <u>1/2</u> Hours | | | Hammer Wt. <u>300#</u> | | <u>140#</u> | | TOTAL HRS. _____ | |
| <u>casing out</u> | | | | Hammer Fall <u>24"</u> | | <u>30"</u> | BIT | BORING FOREMAN <u>W. Manco</u> | |
| | | | | | | | | INSPECTOR _____ | |
| | | | | | | | | SOILS ENGR. <u>D. Andrews</u> | |

LOCATION OF BORING:

| Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 3 | 0'-2' | D | 14 | 12 | 12 | dry | 13'-0" | Brown SILT and coal-ash - FILL, some fine sand -lost sample @ 5' -pushing cobble- lost sample @ 7' | 1 | 24" | 21" |
| 18 | | | 19 | | | medium | | | | | |
| 25 | | | | | | dense | | | | | |
| 21 | | | | | | | | | | | |
| 31 | | | | | | | | | | | |
| 12 | 5'-7' | D | 29 | 28 | 18 | dry | | | | | |
| 12 | | | 14 | | | dense | | | | | |
| 12 | 7'-9' | D | 16 | 8 | 8 | | | | | | |
| 11 | | | 5 | | | | | | | | |
| 14 | | | | | | moist | | | | | |
| 7 | 10'-12' | D | 7 | 8 | 5 | medium | | | | | |
| 16 | | | 11 | | | dense | | | | | |
| 22 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| 5 | 15'-17' | D | 2 | 7 | 9 | " | 20'-0" | Dark gray ORGANIC SILT, Some fine to coarse sand | 3 | 24" | 21" |
| 5 | | | 6 | | | | | | | | |
| 6 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | 20'-22' | D | 2 | 4 | 4 | " | | | | | |
| 9 | | | 7 | | | | | | | | |
| 13 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 17 | | | | | | | | | | | |
| 15 | 25'-27' | D | 6 | 8 | 8 | " | 30'-0" | Brown fine to medium SAND, Little organic silt | 4 | 24" | 21" |
| 19 | | | 10 | | | | | | | | |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 24 | 30'-32' | D | 6 | 10 | 13 | " | | | | | |
| 28 | | | 15 | | | | | | | | |
| 27 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 23 | | | | | | moist | | | | | |
| 20 | 35'-37' | D | 10 | 12 | 18 | dense | | Brown fineto coarse SAND, Some silt, little fine to coarse gravel | 6 | 24" | 23" |
| 22 | | | 14 | | | | | | | | |
| 25 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |

GROUND SURFACE TO 78' USED 2 1/2 "CASING: THEN S/S to 80'

Sample Type
 D=Dry C=Cored W=Washed
 JP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 JT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 80'
 Rock Coring --
 Samples 15
 HOLE NO. B-27

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. B-27
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO same as 1 ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 PLES SENT TO _____ OUR JOB NO. _____

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|-------------------|-------------------|---------|-----------|----------------------|------------|
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | _____ a.m. |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ p.m. |
| | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|---------------------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| 40 | 28 | 40'-42' | D | 11 | 15 | 19 | moist dense | 46'-0" | Brown fine to coarse SAND, Some silt, little fine to coarse gravel | 8 | 24" | 21" | |
| | 29 | | | 19 | | | | | | | | | |
| | 37 | | | | | | | | | | | | |
| | 44 | | | | | | | | | | | | |
| | 43 | | | | | | moist very dense | 46'-0" | Brown SILT and fine sand, Some fine gravel | 9 | 24" | 19" | |
| | 35 | 45'-47' | D | 11 | 14 | 31 | | | | | | | |
| | 58 | | | 62 | | | | | | | | | |
| | 60 | | | | | | | | | | | | |
| 50 | 67 | | | | | | " | 55'-0" | | 10 | 24" | 20" | |
| | 37 | 50'-52' | D | 23 | 23 | 30 | | | | | | | |
| | 41 | | | 32 | | | | | | | | | |
| | 62 | | | | | | | | | | | | |
| | 87 | | | | | | | 57'-0" | Gray SILT, trace fine sand | 11 | 24" | 21" | |
| | 98 | | | | | | | | | | | | |
| | 66 | 55'-57' | D | 17 | 21 | 23 | moist dense | | | | | | |
| | 71 | | | 20 | | | | | | | | | |
| 60 | 92 | | | | | | moist medium dense | 72'-0" | Gray fine SAND, little silt (Sand running up casing 9" @ 60' sample) | 12 | 24" | 23" | |
| | 88 | | | | | | | | | | | | |
| | 90 | | | | | | | | | | | | |
| | 44 | 60'-62' | D | 3 | 4 | 8 | | | | | | | |
| | 52 | | | 13 | | | | | | | | | |
| | 58 | | | | | | | 72'-0" | Gray medium to fine SAND (Sand running up casing 3'7" at 65' sample) | 13 | 24" | 22" | |
| | 72 | | | | | | | | | | | | |
| | 100 | | | | | | | | | | | | |
| | 69 | 65'-67' | D | 7 | 18 | 18 | moist dense | | | | | | |
| | 88 | | | 25 | | | | | | | | | |
| | 125 | | | | | | | 72'-0" | Dark gray fine to coarse SAND, some silt and fine gravel, cemented TILL | 14 | 24" | 23" | |
| | 161 | | | | | | | | | | | | |
| | 185 | | | | | | | | | | | | |
| | 48 | 70'-72' | D | 8 | 16 | 19 | " | | | | | | |
| | 153 | | | 28 | | | | | | | | | |
| | 465 | | | | | | | 80'-0" | Bottom of Boring 80'-0" | 15 | 24" | -- | |
| | 278 | 74'-76' | D** | 48 | 67 | 31 | moist very dense | | | | | | |
| | | | | 44 | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | D** denotes used 300# wt. on open end | | | | | | | | | |
| | | | | A Rod sampler | | | | | | | | | |
| B | | 78-80' | D | 35 | 37 | 48/66 | | 80'-0" | Bottom of Boring 80'-0" | -- | 24" | 0" | |

GROUND SURFACE TO 78' USED 2 1/2" CASING: THEN lost sample bumping back

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____
HOLE NO. B-27

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE _____
 HOLE NO. B-28
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

TO Providence Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------------------|------------------|--|---------------|---------------|----------|--------------------------------|------|
| At <u>9'6"</u> after <u>1/2</u> Hours | <u>Rods-"AW"</u> | | <u>BX</u> | <u>S/S</u> | | START <u>7/21/71</u> | |
| <u>casing @ 40'</u> | Type | | <u>2 1/2"</u> | <u>1 3/8"</u> | | COMPLETE <u>7/23/71</u> | |
| At <u>9'</u> after <u>3/4</u> Hours | Size I.D. | | <u>300#</u> | <u>140#</u> | | TOTAL HRS. _____ | |
| <u>casing out</u> | Hammer Wt. | | <u>24"</u> | <u>30"</u> | BIT | BORING FOREMAN <u>W. Manco</u> | |
| | Hammer Fall | | | | | INSPECTOR <u>D. Andrews</u> | |
| | | | | | | SOILS ENGR. <u>D. Andrews</u> | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------------|------------------------------|---------------------|---|--------|---|--|---|-----|-----|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec | | | |
| 10 | 3 | 0'-2' | D | 1 | 3 | 16 | Dry dense | 15'0" | Brown fine to medium SAND, coal, ash, FILL | 1 | 24" | 21" | | | |
| | 8 | | | 14 | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | |
| | 18 | | | | | | Dry medium dense | | | | Brown fine SAND, little silt and fine gravel, FILL | 2 | 24" | 20" | |
| | 14 | 5'-7' | D | 12 | 13 | 13 | | | | | | | | | |
| | 22 | | | 9 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | |
| 5 | 10'-11'6" | D | 5 | 8 | 10 | Moist dense | | 15'0" | Brown fine to medium SAND, little fine gravel, fuel odor noted, FILL | 3 | 24" | 18" | | | |
| 11 | | | 30 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | |
| 20 | 8 | 15'-17' | D | 6 | 4 | 4 | Moist stiff | 21'0" | Dark gray ORGANIC SILT (strong odor of fuel) | 4 | 24" | 13" | | | |
| | 8 | | | 4 | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | |
| | 12 | | | | | | Moist medium dense | | | | | | | | |
| | 18 | 20'-22' | D | 3 | 3 | 7 | | | | | 25'0" | Dark gray fine to medium SAND, some organic silt | 5 | 24" | 23" |
| | 23 | | | 7 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | |
| 21 | 25'-27' | D | 12 | 13 | 10 | | | | | | | | | | |
| 23 | | | 13 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| 30 | 30 | 27'-29' | D | 13 | 16 | 14 | " | 25'0" | Gray-brown fine to coarse SAND | 6 | 24" | 20" | | | |
| | 36 | | | 17 | | | | | | | | | | | |
| | 30 | 30'-32' | D | 13 | 14 | 8 | " | | | | Gray-brown fine to coarse SAND, some silt & coarse to fine gravel | 7 | 24" | 18" | |
| | 43 | | | 17 | | | | | | | | | | | |
| | 46 | | | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | | | |
| | 51 | | | | | | | | | | | | | | |
| | 48 | 35'-37' | D | 10 | 13 | 13 | " | | | | | 25'0" | Gray-brown fine to coarse SAND, some silt & coarse to fine gravel | 8 | 24" |
| 49 | | | 10 | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | |
| 40 | 57 | | | | | | | | | | | | | | |

GROUND SURFACE TO 85' USED 2 1/2" CASING: THEN S/S to 87'

| | | | |
|--|---|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
|--|---|---|---|

SUMMARY:
 Earth Boring 87'
 Rock Coring _____
 Samples 17

HOLE NO. B-28

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-28

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.00

TO Same as #1

ADDRESS Same as #1

PROJECT NAME _____

LOCATION _____

REPORT SENT TO _____

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. _____

Date _____ Time _____
 START Same as #1 o.m.
 COMPLETE _____ p.m.
 TOTAL HRS. _____
 BORING FOREMAN _____
 INSPECTOR _____
 SOILS ENGR. _____

GROUND WATER OBSERVATIONS
 At Same as #1 after _____ Hours
 Type Same as #1
 Size I.D. _____
 At _____ after _____ Hours
 Hammer Wt. _____
 Hammer Fall _____

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|--|---|--------|-----|------|-----|----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | | |
| 50 | 33 | 40'-42' | D | 17 | 19 | 22 | Moist dense | | Brown fine to coarse SAND, some silt & fine to medium gravel | 9 | 24' | 18 | | |
| | 41 | | | 16 | | | | | | | | | | |
| | 47 | | | | | | | | | | | | | |
| | 52 | | | | | | | | | | | | | |
| | 58 | | | | | | | | | | | | | |
| | 34 | 45'-47' | D | 29 | 40 | 22 | " | | | | | 10 | 24' | 22 |
| | 55 | | | 21 | | | | | | | | | | |
| | 71 | | | | | | | | | | | | | |
| | 85 | | | | | | | | | | | | | |
| | 130 | | | | | | Moist very dense | | | | | | | |
| 60 | 71 | 50'-52' | D | 31 | 38 | 35 | | | | 11 | 24' | 23 | | |
| | 67 | | | 36 | | | | | | | | | | |
| | 93 | | | | | | | | | | | | | |
| | 114 | | | | | | | | | | | | | |
| | 126 | | | | | | | | | | | | | |
| | 72 | 55'-57' | D | 44 | 46 | 32 | " | | | 12 | 24' | 22 | | |
| | 85 | | | 27 | | | | | | | | | | |
| | 110 | | | | | | | | | | | | | |
| | 131 | | | | | | | | | | | | | |
| | 147 | | | | | | | | | | | | | |
| 70 | 218 | 60'-62' | D | 30 | 33 | 46 | " | | | 13 | 24' | 19 | | |
| | 141 | | | 49 | | | | | | | | | | |
| | 181 | | | | | | | | | | | | | |
| | 180 | | | | | | | | | | | | | |
| | 129 | | | | | | | | | | | | | |
| | 26 | 65'-67' | D | 10 | 18 | 18 | Moist dense | | (Note: 64' to 66' running sand) | 14 | 24' | 24 | | |
| | 40 | | | 24 | | | | | | | | | | |
| | 52 | | | | | | | | | | | | | |
| | 69 | | | | | | | | | | | | | |
| | 76 | | | | | | Moist very dense | | Gray-brown medium to coarse SAND @70' sand running up 11" | 15 | 24' | 20 | | |
| 42 | 70'-72' | D | 19 | 28 | 29 | | | | | | | | | |
| 50 | | | 29 | | | | | | | | | | | |
| 61 | | | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | | |
| 84 | | | | | | | | Gray fine SAND, trace silt and fine gravel | 16 | 24' | 20 | | | |
| 72 | 75'-77' | D | 67 | 67 | 110 | " | | | | | | | | |
| 107 | | | 120 | | | | | | | | | | | |
| 107 | | | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | | | |
| 80 | 125 | | | | | | | 79'0" (see next page) | | | | | | |

GROUND SURFACE TO _____
 Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

USED _____
 Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

"CASING: THEN _____
 140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____
HOLE NO. B-28

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3
 DATE _____
 HOLE NO. B-28
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.00

TO Same as #1 ADDRESS Same as #1
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|--|---|--|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>Same as #1</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR</p> <p style="text-align: center;"><u>same as #1</u></p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____ BIT _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date Time</p> <p>START <u>same as #1</u> _____ a.m. _____ p.m.</p> <p>COMPLETE _____</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc | SAMPLE | | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|--|--------|------|------|----|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Per. | Rec. | | |
| 90 | 66 | 80'-82' | D | 39 | 29 | 29 | Moist very dense | | Gray fine SAND, some silt fine gravel, & shale cemented TILL | 16 | 24" | 20 | | |
| | 112 | | | 38 | | | | | | | | | | |
| | 153 | | | | | | | | | | | | | |
| | 160 | | | | | | | | | | | | | |
| | 147 | | | | | | | | | | | | | |
| | | 85'-87' | D | 21 | 25 | 28 | " | 87'0" | | | 17 | 24" | 20 | |
| | | | | 29 | | | | | Bottom of boring 87'0" | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| | | | | |
|--|--|--|--|---|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____ "CASING: THEN _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense</p> | <p>Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> |
|--|--|--|--|---|

HOLE NO. **B-28**

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

DATE _____

HOLE NO. B-29

LINE & STA. _____

OFFSET _____

SURF. ELEV. 11.00

TO Providence Gas Co.-Maloy & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| | | | | | | |
|---------------------------|------------------------|----------------------------|-----------------------|-------------------|---------------------------------|----------------------|
| GROUND-WATER OBSERVATIONS | | Casing <u>Lois-"AW"</u> | SAMPLER <u>S/S</u> | CORE BAR _____ | Date: _____ Time: _____ | |
| At <u>13'4"</u> | after <u>1/2</u> Hours | | | | Type _____ | START <u>7/16/71</u> |
| At _____ | after _____ Hours | Size I.D. <u>1 3/8"</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>7/15/71</u> | p.m. |
| | | Hammer Wt. <u>300#</u> | <u>120#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>32"</u> | _____ | BORING FOREMAN <u>D. Harold</u> | |
| | | | | _____ | INSPECTOR _____ | |
| | | | | _____ | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|------------------|------------------------------|---------------------|---|--------|--|------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | | |
| 10 | 2 | 0'-2' | D | 2 | 7 | 27 | Dry | 13'7" | Gray-brown fine SAND, some fine to medium gravel FILL | 1 | 24' | 24' | | |
| | 13 | | | 10 | | | very dense | | | | | | | |
| | 12 | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | |
| | 12 | 5'-7' | D | 17 | 11 | 5 | Dry loose | | | | Gray-brown fine SAND, some fine to medium gravel - black coal & ash FILL | 2 | 20' | 24' |
| | 9 | | | 3 | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 5 | 12'-13' | D | 13 | | | Wet medium dense | | | 3 | 12' | | 11' | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 20 | 1 | | | | | | Wet very stiff | 15'1" | Cored CONCRETE - FILL | | | | | |
| | 6 | 15'-16' | D | 10 | 13 | 10 | | | | | | 4 | 24' | 24' |
| | 14 | | | 12 | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | |
| | 12 | 20'-22' | D | 15 | 13 | 9 | Wet medium dense | | | | Brown fine to medium SAND & silt | 5 | 24' | 24' |
| | 19 | | | 11 | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | |
| | 8 | 25'-27' | D | 7 | 5 | 9 | " | | | | | | 6 | 24' |
| 15 | | | 10 | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 30 | 13 | 30'-32' | D | 17 | 22 | 22 | Wet dense | 29' | Gray fine to coarse SAND, little fine to medium gravel little silt | 7 | | 24' | 24' | |
| | 22 | | | 21 | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | |
| | 17 | 35'-37' | D | 13 | 13 | 15 | " | | | | Gray medium to coarse SAND, trace fine gravel & silt | 8 | 24' | 24' |
| | 21 | | | 14 | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

GROUND SURFACE TO 04' USED DNF "CASING: THEN S/S to 07'

| | | | | |
|--|---|--|---|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>07'</u> |
| | | | | Rock Coring _____ Samples <u>10</u> |

HOLE NO. B-29

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-29

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO From ea #1

ADDRESS Same as #1

PROJECT NAME _____

LOCATION _____

REPORT SENT TO _____

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. _____

| | | | | | | |
|--|-------------------|--------|-------------------|----------|-------------------|------------------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | Date | Time |
| At <u>Same as #1</u> after _____ Hours | Type _____ | | <u>Same as #1</u> | | <u>Same as #1</u> | |
| At _____ after _____ Hours | Size I.D. _____ | | | | | |
| | Hammer Wt. _____ | | | BIT | | |
| | Hammer Fall _____ | | | | | |
| | | | | | START | <u>Same as #1</u> g.m. |
| | | | | | COMPLETE | g.m. |
| | | | | | TOTAL HRS. | g.m. |
| | | | | | BORING FOREMAN | |
| | | | | | INSPECTOR | |
| | | | | | SOILS ENGR. | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 50 | 15 | 43'-42' | D | 15 | 25 | 37 | Moist very dense | 42' | Gray medium SAND, trace fine gravel & silt (running) | 9 | 24' | 24' |
| | 26 | | | 35 | | | | | | | | |
| | 50 | | | | | | | | | | | |
| | 70 | | | | | | | | | | | |
| | 103 | | | | | | | | | | | |
| | 29 | 45'-47' | D | 22 | 37 | 33 | " | | Gray fine to coarse SAND & gravel, little silt | 10 | 24' | 24' |
| | 47 | | | 37 | | | | | | | | |
| | 50 | | | | | | | | | | | |
| | 60 | | | | | | | | | | | |
| | 60 | 21 | 50'-52' | D | 17 | 24 | 33 | " | 53' 6" | Gray fine to coarse running SAND, trace silt | 11 | 24' |
| 27 | | | | 32 | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | |
| 30 | 55'-57' | D | 7 | 19 | 34 | " | | | | 22 | 24' | 24' |
| 42 | | | | 19 | | | | | | | | |
| 57 | | | | | | | | | | | | |
| 60 | 33 | | | | | | | | | | | |
| 60 | 37 | 60'-62' | D | 9 | 24 | 34 | " | 63' | Gray medium running SAND, trace silt | 12 | 24' | 24' |
| 54 | | | | 33 | | | | | | | | |
| 65 | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | |
| 75 | 65'-67' | D | 6 | 13 | 27 | " | | | | 14 | 24' | 24' |
| 60 | | | | 27 | | | | | | | | |
| 63 | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | |
| 70 | 100 | 70'-72' | D | 2 | 20 | 49 | " | | | 15 | 24' | 24' |
| 84 | | | | 47 | | | | | | | | |
| 85 | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | |
| 50 | 70'-77' | D | 3 | 15 | 33 | " | | | | 16 | 24' | 24' |
| 71 | | | | 37 | | | | | | | | |
| 69 | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | |
| 61 | 117 | | | | | | | | | | | |

| | | | |
|---------------------------------|------------------|---|--------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Earth Boring _____ |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Rock Coring _____ |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | Samples _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | 0-4 Soft | 30+ Hard |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |

HOLE NO. B-29

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____
HOLE NO. B-29
LINE & STA. _____
OFFSET _____
SURF. ELEV. _____

TO same as #1 ADDRESS same as #1
PROJECT NAME _____ LOCATION _____
REPORT SENT TO _____ PROJ. NO. _____
SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>same as #1</u> after _____ Hours At _____ after _____ Hours | CASING SAMPLER CORE BAR Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | Date _____ Time _____ START <u>same as #1</u> a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 90 | 02 | 11'-12' | D | 6 | 21 | 34 | Moist very dense | 97' | Gray fine to medium SAND Note: sand running up casing 10' at 90' | 17 | 24" | 24 | |
| | 03 | | | | | | | | | | | | |
| | 04 | | | | | | | | | | | | |
| | 05 | | | | | | | | | | | | |
| | 06 | | | | | | | | | | | | |
| | 07 | | | | | | | | | | | | |
| | 08 | | | | | | | | | | | | |
| | 09 | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| 100 | 12 | 15'-17' | D | 11 | 15 | 27 | " | 97' | Bottom of boring 97' | 18 | 24" | 24 | |
| | 13 | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | |

| | | | |
|---|---|--|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ HOLE NO. <u>B-29</u> |
|---|---|--|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Providence Gas Co., -Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

SHEET 1 OF 2
 DATE _____
 HOLE NO. B-30
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 11.50

| | | | | |
|--|--|--|----------------------------------|--|
| GROUND WATER OBSERVATIONS At <u>11'10"</u> after <u>20</u> min. hrs. At _____ after _____ Hours | Rods - " <u>AH</u> " Type _____ Size I. D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> BIT _____ | CORE BAR _____ _____ _____ | Date _____ Time _____ START <u>7/16/71</u> a.m. COMPLETE <u>7/20/71</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>C. Lenling</u> INSPECTOR _____ SOILS ENGR. _____ |
|--|--|--|----------------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|------------------|------------------------------|---|---|--|--|------|-----|-----|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Per. | Rec. | | | |
| | | | | | | | | | | | | | | | |
| 10 | 3 | 0'-2' | D | 2 | 7 | 12 | Moist medium dense | 5' | 6" Brown fine SAND to black fine SAND, little silt, trace coarse gravel FILL | 1 | 24" | 15' | | | |
| | 10 | | | 15 | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | |
| | 17 | 5'-7' | D | 16 | 15 | 14 | " | | | 10' | Gray-brown fine to coarse SAND, trace silt & coarse to fine gravel, trace cement | 2 | 24" | 12' | |
| | 25 | | | 16 | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | |
| 11 | 10'-12' | D | 9 | 13 | 10 | wet medium dense | 15' | Gray-brown fine to coarse SAND, little silt, little fine to medium gravel | 3 | | | 24" | 14' | | |
| 8 | | | 12 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 15 | 15'-17' | D | 18 | 24 | 22 | Wet hard | | | 15' | Brown SILT, little fine sand | 4 | 24" | 12' | | |
| 24 | | | 24 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 19 | 20'-22' | D | 12 | 18 | 23 | Wet very dense | 15' | Brown SILT (varved) & fine sand layers | | | 5 | 24" | 12' | | |
| 25 | | | 26 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | | |
| 23 | 25'-27' | D | 20 | 26 | 31 | " | | | 15' | Brown SILT (varved) & fine sand layers | 6 | 24" | 13' | | |
| 34 | | | 37 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 32 | 30'-32' | D | 10 | 21 | 20 | " | 15' | Brown SILT (varved) & fine sand layers | | | 7 | 24" | 8' | | |
| 47 | | | 32 | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | | | | |
| 96 | | | | | | | | | | | | | | | |
| 38 | 35'-37' | D | 12 | 32 | 36 | " | | | 15' | Brown SILT (varved) & fine sand layers | 8 | 24" | 12' | | |
| 63 | | | 39 | | | | | | | | | | | | |
| 94 | | | | | | | | | | | | | | | |
| 127 | | | | | | | | | | | | | | | |
| 40 | 108 | | | | | | | | | | | | | | |

GROUND SURFACE TO 50' USED 2 1/2" CASING: THEN S/S to 59'

| | | | |
|--|---|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V. Stiff | SUMMARY: Earth Boring <u>59'</u> Rock Coring _____ Samples <u>13</u> HOLE NO. <u>B-30</u> |
|--|---|---|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. B-31

LINE & STA. _____

OFFSET _____

SURE. ELEV. 11.5'

TO _____ ADDRESS _____
 PROJECT NAME 8000 03-01 LOCATION 8000 03-01
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | |
|---|---|--|
| GROUND WATER OBSERVATIONS At <u>8000 03-01</u> after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER <u>Same as #1</u> CORE BAR _____ Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | Date _____ Time _____ START <u>8000 03-01</u> _____ a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------------|------------------------------|--|---|---|--|------|-----|----|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. | | | |
| 50 | 19 | 40'-41'5" | D | 9 | 25 | 33 | Wet dense | 40'0" | Brown fine to medium SAND, trace of silt | 0 | 24' | 1 | | | |
| | 21 | | | 16 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | |
| | 29 | 45'-47' | D | 5 | 23 | 21 | " | | | 45'0" | Brown fine to coarse SAND, some silt, little fine gravel | 9 | 25' | 11 | |
| | 31 | | | 1 | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | | |
| 41 | 50'-52' | D | 1 | 34 | 35 | Wet very dense | 50'0" | Brown fine to medium SAND some silt, & fine to medium gravel, cemented | 10 | | | 26' | 12 | | |
| 43 | | | 3 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | | |
| 53 | 53'-57' | D | 3 | 28 | 21 | Wet dense | | | 55'0" | Brown fine to medium SAND, coarse fine to medium gravel | 11 | 27' | 13 | | |
| 55 | | | 2 | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | | | | |
| 61 | | | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | |
| 67 | 60'-63' | D | 7 | 32 | 32 | Wet very dense | 60'0" | Brown fine to medium SAND, coarse fine to medium gravel | | | 12 | 28' | 14 | | |
| 69 | | | 3 | | | | | | | | | | | | |
| 71 | | | | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | |
| 77 | | | | | | | | | | | | | | | |
| 79 | | | | | | | | | | | | | | | |
| 81 | 65'-67' | D | 3 | 34 | 44 | " | | | 65'0" | Brown fine to coarse running SAND | 13 | 29' | 15 | | |
| 83 | | | 3 | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | | | | |
| 87 | | | | | | | | | | | | | | | |
| 89 | | | | | | | | | | | | | | | |
| 91 | | | | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | | | | |
| 97 | 70'-72' | D | 1 | 29 | 27 | " | 70'0" | Gray fine to coarse running SAND | | | 14 | 30' | 16 | | |
| 99 | | | 1 | | | | | | | | | | | | |
| 101 | | | | | | | | | | | | | | | |
| 103 | | | | | | | | | | | | | | | |
| 105 | | | | | | | | | | | | | | | |
| 107 | | | | | | | | | | | | | | | |
| 109 | | | | | | | | | | | | | | | |
| 111 | 75'-77' | D | 2 | 38 | 35 | " | | | 75'0" | Gray fine to coarse SAND, silt, fine gravel, and decomposed shale, FILL | 15 | 31' | 17 | | |
| 113 | | | 2 | | | | | | | | | | | | |
| 115 | | | | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | | | | |
| 119 | | | | | | | | | | | | | | | |
| 121 | | | | | | | | | | | | | | | |
| 123 | | | | | | | | | | | | | | | |
| 125 | | | | | | | | | | | | | | | |
| 127 | | | | | | | | | | | | | | | |
| 129 | | | | | | | | | | | | | | | |

| | | |
|--|---|---|
| GROUND SURFACE TO _____ | USED _____ "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff |
| | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | HOLE NO. <u>B-31</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1

DATE _____

HOLE NO. B-33

LINE & STA. _____

OFFSET _____

SURF. ELEV. 10.5'

TO Prot. Gas Co. - Walcy & Aldrich
 PROJECT NAME Tank Site
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS Cambridge, Mass.
 LOCATION Providence, R.I.
 PROJ NO. _____
 OUR JOB NO. 71-297

| | | | | | | | |
|-------------------------------------|---|--|----------------------------|--|-------------------|--|--|
| GROUND WATER OBSERVATIONS | | Rodg. <u>"AU"</u> Type _____ Size I.D. <u>1 3/8"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING <u>RM-2 1/2"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> | CORE BAR _____ | Date _____ Time _____ | |
| At <u>9'</u> after <u>1/2</u> Hours | START <u>7/15/71</u> a.m. p.m. | | | | | COMPLETE <u>7/15/71</u> a.m. p.m. | |
| At _____ after _____ Hours | TOTAL HRS. _____ | BORING FOREMAN <u>D. V. ...</u> | INSPECTOR _____ | | SOILS ENGR. _____ | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 10 | 1 | 0'-0" - 0'-5" | D | 3 | 12 | 27 | Dry dense | | Gray-brown fine SAND, some fine gravel, cinders, FILL | 1 | 24 | 23 |
| | 2 | 0'-5" - 0'-10" | | | | | | 4'0" | | | | |
| | 3 | 0'-10" - 0'-15" | | | | | | | | | | |
| | 4 | 0'-15" - 0'-20" | | | | | | | | | | |
| | 5 | 0'-20" - 0'-25" | | | | | | | | | | |
| | 6 | 0'-25" - 0'-30" | | | | | | | | | | |
| | 7 | 0'-30" - 0'-35" | | | | | | | | | | |
| | 8 | 0'-35" - 0'-40" | | | | | | | | | | |
| | 9 | 0'-40" - 0'-45" | | | | | | | | | | |
| | 10 | 0'-45" - 0'-50" | | | | | | | | | | |
| 20 | 11 | 0'-50" - 0'-55" | | | | | | | | | | |
| | 12 | 0'-55" - 0'-60" | | | | | | | | | | |
| | 13 | 0'-60" - 0'-65" | | | | | | | | | | |
| | 14 | 0'-65" - 0'-70" | | | | | | | | | | |
| | 15 | 0'-70" - 0'-75" | | | | | | | | | | |
| | 16 | 0'-75" - 0'-80" | | | | | | | | | | |
| | 17 | 0'-80" - 0'-85" | | | | | | | | | | |
| | 18 | 0'-85" - 0'-90" | | | | | | | | | | |
| | 19 | 0'-90" - 0'-95" | | | | | | | | | | |
| | 20 | 0'-95" - 0'-100" | | | | | | | | | | |
| 30 | 21 | 0'-100" - 0'-105" | | | | | | | | | | |
| | 22 | 0'-105" - 0'-110" | | | | | | | | | | |
| | 23 | 0'-110" - 0'-115" | | | | | | | | | | |
| | 24 | 0'-115" - 0'-120" | | | | | | | | | | |
| | 25 | 0'-120" - 0'-125" | | | | | | | | | | |
| | 26 | 0'-125" - 0'-130" | | | | | | | | | | |
| | 27 | 0'-130" - 0'-135" | | | | | | | | | | |
| | 28 | 0'-135" - 0'-140" | | | | | | | | | | |
| | 29 | 0'-140" - 0'-145" | | | | | | | | | | |
| | 30 | 0'-145" - 0'-150" | | | | | | | | | | |
| 40 | 31 | 0'-150" - 0'-155" | | | | | | | | | | |
| | 32 | 0'-155" - 0'-160" | | | | | | | | | | |
| | 33 | 0'-160" - 0'-165" | | | | | | | | | | |
| | 34 | 0'-165" - 0'-170" | | | | | | | | | | |
| | 35 | 0'-170" - 0'-175" | | | | | | | | | | |

| | | | |
|--|---|---|---|
| GROUND SURFACE TO <u>35'</u> | | USED <u>1 3/8"</u> "CASING: THEN <u>S/S to 37'</u> | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| SUMMARY: Earth Boring <u>37'</u> Rock Coring _____ Samples <u>0</u> | | | HOLE NO. <u>B-33</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE _____
 HOLE NO. B-34
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO Prov. Gas Co.-Haley & Aldrich ADDRESS Cambridge, Mass.
 PROJECT NAME Prop. Tank LOCATION PROVIDENCE, RI
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-297

| GROUND WATER OBSERVATIONS | | | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|------------------------|-------------------------|------------|---------------|---------|----------|----------------------------------|-------|
| At <u>9'6"</u> | after <u>1/2</u> Hours | Rods - " <u>AW</u> " | Type _____ | <u>5/8</u> | _____ | _____ | START <u>7/29/71</u> | _____ |
| casing <u>30'</u> | | Size I.D. <u>2 1/2"</u> | _____ | <u>1 3/8"</u> | _____ | _____ | COMPLETE <u>7/29/71</u> | _____ |
| At <u>9'</u> | after <u>3/4</u> Hours | Hammer Wt. <u>300#</u> | _____ | <u>140#</u> | _____ | BIT | TOTAL HRS. _____ | _____ |
| Hole Open | | Hammer Fall <u>24"</u> | _____ | <u>30"</u> | _____ | _____ | BORING FOREMAN <u>A. D'Amico</u> | _____ |
| | | | | | | | INSPECTOR _____ | _____ |
| | | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|----------------------|---|--|-----|-----|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No | Pen | Rec | | |
| | | | | | | | | | | | | | | |
| 10 | 6 | 0'-2' | D | 8 | 16 | 15 | Dry dense | 2' | Brown fine SAND, some silt & fine to medium gravel | 1 | 24" | 9" | | |
| | 7 | | | 12 | | | | | | | | | | |
| | 11 | | | | | | Wet very dense | 10' | Brown fine SAND, some silt | | | | | |
| | 15 | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | |
| | 20 | 5'-7' | D | 16 | 25 | 21 | | | | | | 2 | 24" | 12 |
| | 20 | 34 | | | 24 | | | " | 10' | Brown fine to medium SAND some fine to medium gravel little silt | | | | |
| | | 40 | | | | | | | | | | | | |
| | | 49 | | | | | | " | 15' | Brown fine SAND & silt | | | | |
| | | 50 | | | | | | | | | | | | |
| 26 | | 10'-12' | D | 23 | 31 | 38 | | | | | | 3 | 24" | 12 |
| 38 | | | | 30 | | | | | | | | | | |
| 30 | | 79 | | | | | | " | 24' | Gray-brown coarse to fine SAND, some fine to medium gravel, some silt TILL | | | | |
| | | 125 | | | | | | | | | | | | |
| | | 113 | | | | | | " | 37' | Bottom of boring 37' | | | | |
| | | 19 | 15'-17' | D | 35 | 40 | 37 | | | | | | 4 | 24" |
| | 28 | | | 29 | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | |
| | 44 | | | | | | " | 37' | Bottom of boring 37' | | | | | |
| | 47 | | | | | | | | | | | | | |
| | 25 | 20'-22' | D | 17 | 26 | 37 | | | 5 | 24" | 12 | | | |
| | 37 | | | 39 | | | | | | | | | | |
| 57 | | | | | | " | 37' | Bottom of boring 37' | | | | | | |
| 72 | | | | | | | | | | | | | | |
| 167 | | | | | | " | 37' | Bottom of boring 37' | | | | | | |
| 48 | 25'-27' | D | 49 | 45 | 33 | | | | | | 6 | 24" | 12 | |
| 110 | | | 45 | | | | | | | | | | | |
| 277 | | | | | | | | | | | | | | |
| 40 | 280 | | | | | | " | 37' | Bottom of boring 37' | | | | | |
| | 240 | | | | | | | | | | | | | |
| | 51 | 30'-32' | D | 20 | 25 | 26 | | | 7 | 24" | 12 | | | |
| | 110 | | | 29 | | | | | | | | | | |
| | 182 | | | | | | " | 37' | Bottom of boring 37' | | | | | |
| | 280 | | | | | | | | | | | | | |
| 477 | | | | | | | | | | | | | | |
| | | 35'-37' | D | 102 | 151 | 142 | | | 8 | 24" | 12 | | | |
| | | | | 141 | | | | | | | | | | |

GROUND SURFACE TO 35' USED 2 1/2" CASING: THEN 5/8" to 37'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 37'
 Rock Coring _____
 Samples 8

HOLE NO. B-34

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 3
 DATE _____
 HOLE NO. 35
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.5'

| | | | | |
|---|--|--|-----------------------------|--|
| GROUND WATER OBSERVATIONS At <u>8'8"</u> after _____ Hours Overnight At _____ after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>9/27/71</u> o.p. COMPLETE <u>9/28/71</u> p.p. TOTAL HRS. _____ BORING FOREMAN <u>C. Koehler</u> INSPECTOR _____ SOILS ENGR. _____ |
|---|--|--|-----------------------------|--|

LOCATION OF BORING: Sassafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Per | Rec |
| | | | | | | | | | | | | |
| 5 | 0 | 0'-2' | D | 1 | 2 | 6 | Dry medium dense | 4' | Miscellaneous FILL | 1 | 24' | 18 |
| | 7 | | | 6 | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 11 | | | | | | | | | | | |
| 10 | 3 | 5'-7' | D | 5 | 3 | 3 | Moist loose | 9' | Gray fine to medium SAND, little silt, trace of fine to medium gravel (Fill) | 2 | 24' | 14 |
| | 3 | | | 2 | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| 15 | 2 | | | | | | | 21' | Gray sandy SILT (Fill) | 3 | 24' | 8' |
| | 1 | 10'-12' | D | 4 | 2 | 18' | Wet soft | | | | | |
| | 2 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| 20 | 3 | 15'-17' | D | 5 | 3 | 1 | Wet medium stiff | 24' | Gray ORGANIC SILT with shells | 4 | 24' | 6' |
| | 3 | | | 4 | | | | | | | | |
| | 8 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| 25 | 6 | | | | | | | 28' | Gray fine to coarse SAND, trace of silt (Fill) | - | 24' | 0' |
| | 4 | 20'-22' | D | 9 | 5 | 3 | " | | | | | |
| | 2 | | | 3 | | | | | | | | |
| | 2 | | | | | | | | | | | |
| 30 | 3 | | | | | | | 34' | Gray SILT & fine Sand, little peat | 7 | 24' | 12' |
| | 6 | | | | | | | | | | | |
| | 11 | 25'-27' | D | 9 | 3 | 5 | Wet medium dense | | | | | |
| | 7 | | | 11 | | | | | | | | |
| 35 | 7 | 27'-28' | D | 7 | 5 | | " | 30' | Gray brown sandy PEAT | 6A | 12' | 12' |
| | 9 | 28'-29' | D | 5 | 6 | | | | | | | |
| | 13 | | | | | | | | | | | |
| | 13 | | | | | | | | | | | |
| 40 | 25 | 30'-32' | D | 26 | 15 | 12 | Wet very stiff | 34' | Gray silty coarse to fine SAND, little fine to coarse gravel, trace of peat | 8 | 24' | 6' |
| | 24 | | | 12 | | | | | | | | |
| | 24 | 32'-34' | D | 12 | 13 | 12 | | | | | | |
| | 23 | | | 12 | | | | | | | | |
| 40 | 13 | | | | | | | 34' | Gray silty coarse to fine SAND, little fine to coarse gravel, trace of peat | 8 | 24' | 6' |
| | 21 | 35'-37' | D | 7 | 8 | 8 | Wet medium dense | | | | | |
| | 18 | | | 9 | | | | | | | | |
| | 31 | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>97'</u> Rock Coring _____ Samples <u>19</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 30 + Hard 4-B M/Stiff 8-15 Stiff 15-30 V-Stiff | HOLE NO. <u>35</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 35

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | | | |
|--|---|---|--|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p>SAMPLER _____</p> <p>_____</p> <p>_____</p> <p>_____</p> | <p>CORE BAR _____</p> <p>_____</p> <p>_____</p> <p>BIT _____</p> | <p style="text-align: center;">Date _____ Time _____</p> <p>START _____</p> <p>COMPLETE _____</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|--|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|-----------------------------|-----|-----------------------------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Re | | |
| 45 | 32 | 40'-42' | D | 16 | 12 | 11 | Wet medium dense | 49' | Gray silty coarse to fine SAND, little fine to coarse gravel, trace of silt | - | 24' | 0 | | |
| | 25 | | | 11 | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | |
| 50 | 23 | 45'-46'6" | D | 8 | 7 | 8 | " | | | | | 9 | 18' | 0 |
| | 18 | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | |
| | 23 | 50'-52' | D | 6 | 5 | 5 | Wet medium stiff | | | | 60' | Gray SILT, little fine sand | 10 | 24' |
| 36 | | | 8 | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | |
| 55 | 36 | | | | | | | | | | | | | |
| | 55 | 55'-57' | D | 43 | 34 | 13 | wet very stiff | | | 11 | | | 24' | 11 |
| | 45 | | | 18 | | | | | | | | | | |
| | 84 | | | | | | | | | | | | | |
| | 50 | | | | | | | | | | | | | |
| 60 | 33 | | | | | | | | | | | | | |
| | 67 | 60'-62' | D | 12 | 11 | 22 | Wet hard | | 60' | Dark gray SILT, clay layers | 12 | 24' | 11 | |
| | 67 | | | 15 | | | | | | | | | | |
| | 56 | | | | | | | | | | | | | |
| | 56 | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 65 | 50 | 65'-67' | D | 16 | 14 | 14 | " | | | | | 13 | 24' | 10 |
| | 60 | | | 17 | | | | | | | | | | |
| | 58 | | | | | | | | | | | | | |
| | 73 | | | | | | | | | | | | | |
| | 44 | | | | | | | | | | | | | |
| 70 | 64 | 70'-72' | D | 7 | 10 | 11 | Wet very stiff | | | 14 | 24' | 14 | | |
| | 60 | | | 10 | | | | | | | | | | |
| | 41 | | | | | | | | | | | | | |
| | 49 | | | | | | | | | | | | | |
| | 45 | | | | | | | | | | | | | |
| 75 | 52 | 75'-77' | D | 9 | 16 | 15 | Wet Hard | | | 15 | 24' | 12 | | |
| | 87 | | | 21 | | | | | | | | | | |
| | 93 | | | | | | | | | | | | | |
| | 113 | | | | | | | | | | | | | |
| | 80 | | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 35

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 35

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | BIT | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|----|--|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Re | | |
| 85 | 116 | 80'-82' | D | 9 | 9 | 5 | Wet very stiff | 85' | Dark gray SILT, clay layers | 16 | 24' | 16 | | |
| | 110 | | | | 14 | | | | | | | | | |
| | 106 | | | | | | | | | | | | | |
| | 112 | | | | | | | | | | | | | |
| | 103 | | | | | | | | | | | | | |
| 90 | 119 | 85'4"-87'4" | D | 5 | 10 | 12 | Wet very stiff | 91' | Gray SILT & fine Sand | 17 | 24' | 12 | | |
| | 112 | | | | | | | | | | | | | |
| | 115 | | | | | | | | | | | | | |
| | 145 | | | | | | | | | | | | | |
| 95 | 113 | 90'-92' | D | 15 | 26 | 28 | W/hard | 97' | Brown fine to medium SAND, some silt, trace of fine gravel | 18 | 24' | 5 | | |
| | | | | | 24 | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 100 | | 95'-97' | D | 19 | 21 | 19 | Moist dense | 97' | Bottom of Boring 97'0" | 19 | 24' | 8 | | |
| | | | | | 22 | | | | | | | | | |

GROUND SURFACE TO _____

USED _____

"CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:

Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 35

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 3
 DATE _____
 HOLE NO. 36
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.2

| | | | | |
|--|--|--|-----------------------------|---|
| GROUND WATER OBSERVATIONS At <u>8'6"</u> after _____ Hours Casing Out At _____ after _____ Hours | Rods-"AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>10/7/71</u> COMPLETE <u>10/13/71</u> TOTAL HRS. _____ BORING FOREMAN <u>A. Gomes</u> INSPECTOR _____ SOILS ENGR. _____ |
|--|--|--|-----------------------------|---|

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No | Pen | Re | |
| 5 | 3 | 0'-2' | D | 3 | 6 | 4 | Wet loose | 4' | Gray brown fine to medium SAND, little fine to medium gravel | 1 | 24' | 12 | |
| | 4 | | | 3 | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | |
| 10 | 1 | 5'-7' | D | 1 | 1 | 1 | Wet loose | 9' | Gray brown fine to medium oil-soaked SAND, trace of medium gravel | 2 | 24' | 6 | |
| | 3 | | | 3 | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | |
| 15 | 4 | 10'-12' | D | 2 | 3 | 5 | Wet medium dense | | Brown fine to coarse SAND, some silt, little fine to medium gravel, FILL | 3 | 24' | 10 | |
| | 6 | | | 6 | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| 20 | 4 | 15'-17' | D | 11 | 6 | 4 | Wet loose | | | 4 | 24' | 11' | |
| | 6 | | | 3 | | | | | | | | | |
| | 9 | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | |
| 25 | P | 20'-21'6" | D | 14 | 11 | 7 | W/m/d | 21'6" | Brown fine SAND, trace of * organic silt & peat | 5A | 13' | 9' | |
| | P | 21'6"-22' | D | 8 | | | W/loose | | | 22'6" | 5B | 6" | 4' |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 30 | 6 | 25'-27' | D | 5 | 5 | 8 | Wet stiff | | Gray brown ORGANIC SILT, trace of peat, trace of fine gravel | 6 | 24' | 10' | |
| | 3 | | | 5 | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 35 | 30 | 30'-32' | D | 2 | 2 | 2 | Wet medium stiff | 35' | | 7 | 24' | 9' | |
| | 22 | | | 3 | | | | | | | | | |
| | 17 | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | |
| 40 | 62 | 35'-37' | D | 2 | 2 | 2 | Wet/m stiff | 38' | Brown ORGANIC SILT & medium to fine Sand | 8 | 24' | 7" | |
| | 34 | | | 5 | | | | | | | | | |
| | 31 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| 40 | 48 | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 107'
 Rock Coring _____
 Samples 22

HOLE NO. 36

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 36

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING: _____

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|--|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | | | | | | | | | | | |
| 45 | 37 | 40'-42' | D | 13 | 20 | 21 | Moist dense | Brown fine to coarse SAND, some silt, trace of fine to medium gravel | 9 | 24' | 10' | |
| | 38 | | | 16 | | | | | | | | |
| | 35 | | | | | | | | | | | |
| | 26 | | | | | | | | | | | |
| 50 | 37 | 45'-47' | D | 23 | 25 | 37 | Moist very dense | | 10 | 24' | 10' | |
| | 75 | | | 43 | | | | | | | | |
| | 65 | | | | | | | | | | | |
| | 55 | | | | | | | | | | | |
| 55 | 37 | 50'-52' | D | 23 | 13 | 33 | " | | 11 | 24' | 9' | |
| | 56 | | | 39 | | | | | | | | |
| | 72 | | | | | | | | | | | |
| | 60 | | | | | | | | | | | |
| 60 | 32 | 55'-57' | D | 23 | 22 | 12 | Moist medium dense | | 12 | 24' | 11' | |
| | 38 | | | 5 | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 40 | | | | | | | | | | | |
| 65 | 44 | 60'-62' | D | 14 | 16 | 17 | Moist dense | Gray medium to fine SAND, some silt, trace of medium gravel | 13 | 24' | 10' | |
| | 56 | | | 18 | | | | | | | | |
| | 64 | | | | | | | | | | | |
| | 65 | | | | | | | | | | | |
| 70 | 45 | 65'-67' | D | 12 | 11 | 11 | Moist medium dense | | - | 24' | 0" | |
| | 40 | | | 14 | | | | | | | | |
| | 50 | 67'-69' | D | 16 | 12 | 11 | Moist medium dense | | 14 | 24' | 11" | |
| | 56 | | | 13 | | | | | | | | |
| 75 | 60 | 70'-72' | D | 7 | 13 | 10 | Moist medium dense | Gray fine SAND, some silt | 15 | 24' | 5" | |
| | 58 | | | 8 | | | | | | | | |
| | 80 | | | | | | | | | | | |
| | 160 | | | | | | | | | | | |
| 80 | 80 | 75'-77' | D | 21 | 13 | 15 | Wet dense | Gray fine to coarse SAND, some fine gravel, trace of silt | 16 | 24' | 11" | |
| | 78 | | | 19 | | | | | | | | |
| | 103 | | | | | | | | | | | |
| | 90 | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 36

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 36

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | BIT | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|-----------------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | | | | | | | | | | | |
| 85 | 50 | 80'-82' | D | 10 | 7 | 9 | Wet medium dense | | Gray fine to coarse SAND, some fine gravel, trace of silt | 17 | 24 | 7 |
| | 61 | | | 10 | | | | | | | | |
| | 75 | | | | | | | | | | | |
| | 79 | | | | | | | | | | | |
| 90 | 82 | 85'-87' | D | 20 | 12 | 13 | " | | | 18 | 24 | 9 |
| | 98 | | | 16 | | | | | | | | |
| | 103 | | | | | | | | | | | |
| | 90 | | | | | | | | | | | |
| 95 | 85 | 90'-92' | D | 19 | 15 | 17 | Wet dense | | | 19 | 24 | 10 |
| | 80 | | | 16 | | | | | | | | |
| | 90 | | | | | | | | | | | |
| | 65 | | | | | | | | | | | |
| 100 | 64 | 95'-97' | D | 23 | 14 | 13 | " | (5' Running Sand in Casing) | | 20 | 24 | 9 |
| | 59 | | | 23 | | | | | | | | |
| | 60 | | | | | | | | | | | |
| | 62 | | | | | | | | | | | |
| 105 | 63 | 100'-102' | D | 10 | 10 | 15 | " | | Gray medium to fine SAND, trace of silt & fine gravel | 21 | 24 | 11 |
| | 95 | | | 17 | | | | | | | | |
| | 100 | | | | | | | | | | | |
| | 101 | | | | | | | | | | | |
| 110 | 108 | 105'-107' | D | 13 | 11 | 18 | " | | | 22 | 24 | 10 |
| | | | | 16 | | | | | | | | |
| | | | | | | | | 107' | | | | |
| | | | | | | | | Bottom of Boring 107'0" | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 36

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3
 DATE _____
 HOLE NO. 37
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.6

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME TANK Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------|-------|--|------------------|---------------|-------------|---------------------------------|------|
| At <u>8'6"</u> | after <u>0</u> | Hours | | Rods-"AW" | <u>S/S</u> | | START <u>10/7/71</u> | a.m. |
| <u>95'</u> | Casing | | | Type | | | COMPLETE <u>10/12/71</u> | p.m. |
| At <u>8'6"</u> | after <u>19</u> | Hours | | Size I.D. | <u>1 3/8"</u> | | TOTAL HRS. | |
| | | | | Hammer Wt. | <u>300#</u> | <u>140#</u> | BORING FOREMAN <u>A. Cortez</u> | |
| | | | | Hammer Fall | <u>24"</u> | <u>30"</u> | INSPECTOR <u>R. Varnum</u> | |
| | | | | | | | SOILS ENGR. | |

LOCATION OF BORING: Sasafra Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 5 | 9 | 0'-2' | D | 7 | 17 | 17 | Dry dense | | Brown fine SAND, little fine gravel, silt, cinders, FILL | 1 | 24" | 24" |
| | 20 | | | 20 | | | | | | | | |
| | 105 | | | | | | | | | | | |
| | 70 | | | | | | | 4' | | | | |
| | 47 | | | | | | | | | | | |
| 10 | 13 | 5'-7' | D | 6 | 6 | 7 | Moist medium dense | | Brown black fine SAND & Silt (Fuel odor noted) FILL | 2 | 24" | 24" |
| | 12 | | | 4 | | | | 8' | | | | |
| | 8 | | | | | | | | | | | |
| 15 | 6 | | | | | | | | | | | |
| | 7 | 10'-12' | D | 2 | P | 1 | Wet loose | | Black sandy SILT (Fuel odor noted) FILL | 3 | 24" | 12" |
| | 5 | | | 1 | | | | | | | | |
| | 6 | | | | | | | | | | | |
| 20 | 11 | 15'-17' | D | 13 | 6 | 3 | | 16'6" | | | | |
| | 10 | | | 1 | | | | 17'5" | Black gray fine SAND & Silt | | | |
| | 23 | 17'-19' | D | 1 | 13 | 10 | | | | | | |
| | 33 | | | 9 | | | | | | | | |
| | 24 | | | | | | | | | | | |
| 25 | 30 | 20'-22' | D | 30 | 17 | 16 | Wet dense | | Black gray coarse to medium SAND, some fine to medium gravel (Fuel odor noted) (FILL) | 4 | 24" | 6" |
| | 38 | | | 20 | | | | | | | | |
| | 50 | 22'-24' | D | 11 | 13 | 15 | | 23'6" | | 5 | 24" | 6" |
| | 66 | | | 16 | | | | | | | | |
| 30 | 50 | | | | | | | | | | | |
| | 46 | 25'-26'6" | D | 12 | 11 | 9 | Wet very stiff | | Gray brown SILT, some clay, trace of fine sand (Fuel odor noted) | 6 | 18" | 16" |
| | 50 | | | | | | | | | | | |
| | 62 | | | | | | | | | | | |
| 35 | 74 | | | | | | | | | | | |
| | 65 | | | | | | " | | | | | |
| | 126 | 30'-32' | D | 14 | 12 | 13 | | | | 7 | 24" | 24" |
| | 110 | | | 14 | | | | | | | | |
| | 109 | | | | | | | | | | | |
| 40 | 148 | | | | | | | | | | | |
| | 145 | | | | | | | | | | | |
| | 25 | 35'-37' | D | 15 | 14 | 15 | Wet hard | | | 8 | 24" | 13" |
| | 30 | | | 16 | | | | | | | | |
| 40 | 62 | 37'-38'6" | D | 12 | 24 | 19 | | | | 9 | 18" | 16" |
| | 60 | 38'6"-39' | D | 19 | | | Wet/v stiff | 38'6" | Gray SILT, some clay | 9A | 6" | 4" |
| | 59 | | | | | | | | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | CASING: _____ | THEN _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| SUMMARY: Earth Boring <u>97'</u> Rock Coring <u>19</u> Samples _____ | | | HOLE NO. <u>37</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I

SHEET 2 OF 3

DATE _____

HOLE NO. 37

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | | |
|---|---|---|--|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | CASING _____ SAMPLER _____ CORE BAR _____ Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | START _____ COMPLETE _____ TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ | Date _____ Time _____ o.m p.m o.m |
|---|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-----------|------------------------------|---------------------|---|--------|-----|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 45 | 66 | 41'6"-43'6" | UP | PR/SS/2" | 28 | BLOWS/22" | | 45' | Gray SILT, little clay, trace of fine sand | UP | 1 | 24' | 12" |
| | 36 | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | |
| | 70 | | | | | | | | | | | | |
| 50 | 93 | 45'-47' | D | 14 | 20 | 26 | Wet hard | | Gray brown SILT, & fine Sand | | 10 | 24' | 10" |
| | 145 | | | | | | | | | | | | |
| | 212 | | | | | | | | | | | | |
| | 215 | | | | | | | | | | | | |
| 55 | 230 | 50'-52' | D | 19 | 21 | 26 | " | 53' | Lost all but 2" of Piston Put in Jar -- Gray fine to medium SAND, little silt | UP | 2 | 24' | 2" |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 60 | 39 | 60'-62' | D | 11 | 12 | 14 | Wet medium dense | 60' | Gray fine sandy SILT | | 12 | 24' | 10" |
| | 38 | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | |
| 65 | 44 | 65'-67' | D | 10 | 12 | 12 | Wet medium dense | 65' | Gray fine to medium SAND, little silt (Running up casing) | | 13 | 24' | 16" |
| | 23 | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | |
| 70 | 43 | 70'-72' | D | 7 | 8 | 11 | " | | At 70' trace of medium gravel | | 14 | 24' | 20" |
| | 40 | | | | | | | | | | | | |
| | 53 | | | | | | | | | | | | |
| | 58 | | | | | | | | | | | | |
| 75 | 56 | 75'-77' | D | 9 | 8 | 7 | " | | Gray fine to coarse SAND, little silt, trace of fine to medium gravel | | 15 | 24' | 12" |
| | 58 | | | | | | | | | | | | |
| | 87 | | | | | | | | | | | | |
| | 49 | | | | | | | | | | | | |
| 80 | 86 | | | | | | | | | | | | |
| | 89 | | | | | | | | | | | | |
| | 206 | | | | | | | | | | | | |

| | | | |
|---|---|--|---|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense | _____ Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ | | | HOLE NO. <u>37</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3
 DATE _____
 HOLE NO. 37
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | BIT _____ | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From- To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No | Pen | Rec |
| 85 | 125 | 80'-82' | D | 7 | 6 | 11 | Wet medium dense | 86' | Gray fine to coarse SAND, little silt, trace of fine to medium gravel (Sand Running) | 16 | 24' | 10' |
| | 115 | | | 8 | | | | | | | | |
| | 100 | | | | | | | | | | | |
| | 78 | | | | | | | | | | | |
| | 100 | | | | | | | | | | | |
| 90 | 66 | 85'-87' | D | 9 | 8 | 30 | Wet very dense | 86' | Gray fine to coarse SAND, some fine to medium gravel, some silt, TILL | 17 | 24' | 12' |
| | 66 | | | 57 | | | | | | | | |
| | 112 | | | | | | | | | | | |
| | 111 | | | | | | | | | | | |
| 95 | 98 | 90'-92' | D | 18 | 21 | 21 | Wet dense | 86' | " Cobbles | 18 | 24' | 8' |
| | 135 | | | 21 | | | | | | | | |
| | 175 | | | | | | | | | | | |
| | 215 | | | | | | | | | | | |
| 95 | 215 | 95'-97' | D | 48 | 38 | 48 | Wet/v dense | 97' | Bottom of Boring 97'0" | 19 | 24' | 20' |
| | | | | 30 | | | | | | | | |
| 100 | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50 + Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____
HOLE NO. 37

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 3
 DATE _____
 HOLE NO. 38
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.5

| | | | | |
|---|---|---|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>8'5"</u> after <u>0</u> Hours At <u>8'6"</u> after <u>18</u> Hours <u>100' Casing</u></p> | <p>Rods-"AW" Type _____ Size I.D. _____ Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u></p> | <p>CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u></p> | <p>CORE BAR. _____ BIT _____</p> | <p style="text-align: center;">Date Time</p> <p>START <u>10/13/71</u> _____ COMPLETE <u>10/14/71</u> _____ TOTAL HRS. _____ BORING FOREMAN <u>A. Cortez</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____</p> |
|---|---|---|---|---|

LOCATION OF BORING: Sasafra Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|------|------|--|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen. | Ret. | |
| 5 | - | 0'-2' | D | 3 | 8 | 8 | Dry medium dense | 4' | Brown fine to medium SAND & Gravel, little silt, FILL | 1 | 24" | 24" | |
| | 11 | | | 9 | | | | | | | | | |
| | 13 | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| 10 | 5 | 5'-7' | D | 8 | 2 | 6 | Moist medium dense | 10' | Black gray fine to medium SAND, some fine gravel, little silt (fuel odor noted) FILL | 2 | 24" | 24" | |
| | 7 | | | 6 | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| 15 | 8 | | | | | | | 19' | Gray black fine to medium SAND, little silt (fuel odor noted) FILL | 3 | 24" | 18" | |
| | woh | 10'-12' | D | 4 | 5 | 4 | Wet loose | | | | | | |
| | woh | | | 5 | | | | | | | | | |
| | 1 | | | | | | | | | | | | |
| 20 | 3 | | | | | | " | 19' | Black gray ORGANIC SILT, some fine sand, trace of sea shells | 4 | 24" | 6" | |
| | 4 | 15'-17' | D | 1 | woh | 2 | | | | | | | |
| | 3 | | | woh | | | | | | | | | |
| | 4 | 17'-19' | D | 2 | 1 | 1 | | | | | | | |
| 25 | 2 | | | woh | | | | 30' | Gray ORGANIC SILT, trace of sea shells, fine sand & peat | - | 24" | 0" | |
| | 1 | 19'-20' | D | 2 | 2 | | Wet loose | | | | | | |
| | 14 | 20'-22' | D | 1 | 1 | 1 | | | | | | | |
| | 9 | | | 1 | | | | | | | | | |
| 30 | 9 | 22'-24' | D | 3 | 3 | 2 | " | 35'6" | Brown PEAT | " | " | " | |
| | 8 | | | 3 | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | |
| 35 | 12 | | | | | | | 35'6" | Gray fine to medium SAND & Silt, some fine gravel | 5 | 18" | 15" | |
| | 10 | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | |
| 40 | 30 | 30'-31'6" | D | 2 | 3 | 4 | Wet soft | 35'6" | Brown PEAT | 6 | 6" | 6" | |
| | 26 | 31'6"-32' | D | 3 | | | | | | | | | |
| | 23 | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | |
| 40 | 29 | | | | | | | 35'6" | Brown PEAT | 7 | 6" | 0" | |
| | 36 | 35'-35'6" | D | 6 | | | | | | | | | |
| | 27 | 35'6"-37' | D | 4 | 6 | 7 | Wet medium dense | | | | | | |
| | 22 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>100'</u> Rock Coring _____ Samples <u>19</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 30 + Hard | HOLE NO <u>38</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 38

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | p.m. |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 45 | 30 | 40'-42' | D | 8 | 8 | 12 | Wet medium dense | 45' | Gray fine to medium SAND, & fine gravel, some silt | 8 | 24" | 12" | |
| | 27 | | | 8 | | | | | | | | | |
| | 31 | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | |
| 50 | 50 | 45'-47' | D | 5 | 5 | 6 | Wet medium dense | 50' | Gray brown fine SAND, little silt (Running up Pipe) | 9 | 24" | 22" | |
| | 40 | | | 8 | | | | | | | | | |
| | 38 | | | | | | | | | | | | |
| | 45 | | | | | | | | | | | | |
| | 65 | | | | | | | | | | | | |
| 55 | 19 | 50'-52' | D | 8 | 8 | 21 | Wet dense | 55' | Gray fine SAND, little fine gravel, little silt | 10 | 24" | 20" | |
| | 20 | | | 23 | | | | | | | | | |
| | 65 | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | |
| | 77 | | | | | | | | | | | | |
| 60 | 62 | 55'-57' | D | 9 | 11 | 28 | Wet very dense | 60' | Gray brown fine to coarse SAND, some fine to coarse gravel & silt, cobble | 11 | 24" | 24" | |
| | 58 | | | 38 | | | | | | | | | |
| | 60 | | | | | | | | | | | | |
| | 68 | | | | | | | | | | | | |
| | 80 | | | | | | | | | | | | |
| 65 | 56 | 60'-62' | D | 14 | 20 | 17 | Wet dense | 65' | Gray fine to coarse SAND & Silt, some fine gravel | 12 | 24" | 10" | |
| | 64 | | | 14 | | | | | | | | | |
| | 69 | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | |
| | 51 | | | | | | | | | | | | |
| 70 | 38 | 65'-67' | D | 10 | 10 | 12 | Wet medium dense | 70' | Gray fine SAND & Silt | 13 | 24" | 8" | |
| | 46 | | | 14 | | | | | | | | | |
| | 52 | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | |
| 75 | 25 | 70'-72' | D | 16 | 12 | 16 | Wet medium dense | 75' | Gray fine SAND & Silt, trace of fine gravel | 14 | 24" | 16" | |
| | 40 | | | 15 | | | | | | | | | |
| | 47 | | | | | | | | | | | | |
| | 56 | | | | | | | | | | | | |
| | 62 | | | | | | | | | | | | |
| 80 | 65 | 75'-77' | D | 15 | 20 | 21 | Wet dense | 80' | | 15 | 24" | 10" | |
| | 73 | | | 21 | | | | | | | | | |
| | 66 | | | | | | | | | | | | |
| | 106 | | | | | | | | | | | | |
| | 118 | | | | | | | | | | | | |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston IP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | 30 + Hard |
| | | | HOLE NO. <u>38</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 38

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | |
|--|--|--|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____ SAMPLER _____ CORE BAR _____</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: right;">Date _____ Time _____</p> <p>START _____</p> <p>COMPLETE _____</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|--|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---|---|--------|-----|-----|
| | | | | From | To | | | | | No. | Pen | Rec |
| | | | | 0-6 | 6-12 | 12-18 | | | | | | |
| 85 | 70 | 80'-82' | D | 20 | 8 | 8 | Wet medium dense | Gray fine SAND, little silt, trace of fine gravel | 16 | 24' | 24' | |
| | 45 | | | 8 | | | | | | | | |
| | 38 | | | | | | | | | | | |
| | 46 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | |
| 90 | 55 | 85'-87' | D | 23 | 24 | 26 | Wet very dense | Gray fine to coarse SAND & fine gravel with silt | 17 | 24' | 18' | |
| | 49 | | | 27 | | | | | | | | |
| | 54 | | | | | | | | | | | |
| | 46 | | | | | | | | | | | |
| 95 | 41 | 90'-92' | D | 15 | 18 | 12 | Wet dense | Gray fine to coarse SAND, some silt & fine to medium gravel | 18 | 24' | 5' | |
| | 42 | | | 22 | | | | | | | | |
| | 42 | | | | | | | | | | | |
| | 35 | | | | | | | | | | | |
| 100 | 36 | 95'-97' | D | 18 | 13 | 16 | " | Gray fine to coarse SAND & Silt, trace of fine gravel | 19 | 24' | 8' | |
| | 47 | | | 20 | | | | | | | | |
| | 83 | | | | | | | | | | | |
| | 183 | | | | | | | | | | | |
| | 106 | 100'-100'3" D | D | | | | | Refusal at 100'0" | | | | |
| | | | | | | | | 51 Blows - 140# - 2" Pen. | | | | |
| | | | | | | | | 60 Blows - 300# - 1" Pen. | | | | |

| | | | |
|---|--|--|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <p>Cohesionless Density</p> <p>0-10 Loose</p> <p>10-30 Med Dense</p> <p>30-50 Dense</p> <p>50+ Very Dense</p> | <p>Cohesive Consistency</p> <p>0-4 Soft 30+ Hard</p> <p>4-8 M/Stiff</p> <p>8-15 Stiff</p> <p>15-30 V-Stiff</p> |
| <p>SUMMARY:</p> <p>Earth Boring _____</p> <p>Rock Coring _____</p> <p>Samples _____</p> | | | <p>HOLE NO. 38</p> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R. I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

DATE _____
 HOLE NO. 39
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.9

| | | | | |
|---|--|--|---------------------------------|--|
| GROUND WATER OBSERVATIONS At <u>8'4"</u> after _____ Hours At _____ after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>10/13/71</u> o.p. COMPLETE <u>10/13/71</u> p.p. TOTAL HRS. _____ BORING FOREMAN <u>A. Gomes</u> INSPECTOR _____ SOILS ENGR. _____ |
|---|--|--|---------------------------------|--|

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strato Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Ret |
| | | | | | | | | | | | | |
| 5 | 7 | 0'-2' | D | 5 | 9 | 9 | Dry | 7' | Brown fine to coarse SAND, some fine to medium gravel, FILL | 1 | 24" | 10 |
| | 11 | | | 11 | | | medium | | | | | |
| | 12 | | | | | | dense | | | | | |
| | 13 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| 10 | 14 | 5'-7' | D | 7 | 7 | 9 | " | 20' | Gray brown ORGANIC SILT, little sand, Hydraulic Fill | 2 | 24" | 11 |
| | 12 | | | 6 | | | | | | | | |
| | 11 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| 15 | 2 | 10'-12' | D | 2 | 1 | 1 | Moist soft | 34' | Dark brown coarse to fine SAND, some silt, little fine to medium gravel | 3 | 24" | 11 |
| | 1 | | | 1 | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| 20 | 3 | 15'-17' | D | P | 1 | 1 | " | 34' | Brown fine to coarse SAND, some medium to coarse gravel | 4 | 24" | 10 |
| | 4 | | | 1 | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| 25 | 14 | 20'-22' | D | 2 | 2 | 2 | Moist soft | 34' | Brown fine to coarse SAND, some medium to coarse gravel | 5 | 24" | 14 |
| | 13 | | | 2 | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| 30 | 40 | 25'-27' | D | 14 | 13 | 18 | Moist dense | 34' | Brown fine to coarse SAND, some medium to coarse gravel | 6 | 24" | 10 |
| | 45 | | | 22 | | | | | | | | |
| | 47 | | | | | | | | | | | |
| | 31 | | | | | | | | | | | |
| | 24 | | | | | | | | | | | |
| 35 | 31 | 30'-32' | D | 13 | 10 | 16 | " | 34' | Brown fine to coarse SAND, some medium to coarse gravel | 7 | 24" | 10 |
| | 38 | | | 14 | | | | | | | | |
| | 37 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| | 35 | | | | | | | | | | | |
| 40 | 32 | 35'-37' | D | 17 | 18 | 25 | Wet dense | 34' | Brown fine to coarse SAND, some medium to coarse gravel | 8 | 24" | 9 |
| | 38 | | | 22 | | | | | | | | |
| | 45 | | | | | | | | | | | |
| | 55 | | | | | | | | | | | |
| | 64 | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 57'
 Rock Coring _____
 Samples 12

HOLE NO. 39

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. **71-396**

DATE _____
 HOLE NO. 39
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| | | | | | |
|---|---|---|---|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING</p> <p style="text-align: center;">SAMPLER</p> <p style="text-align: center;">CORE BAR</p> | <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">BIT</p> | <p style="text-align: center;">Date</p> <p style="text-align: center;">Time</p> | <p>START _____ o.n.</p> <p>COMPLETE _____ p.n.</p> <p>TOTAL HRS. _____ p.n.</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|---|---|---|---|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 40 | 40 | 40'-42' | D | 30 | 26 | 24 | Moist dense | | Brown fine to coarse SAND, some medium to coarse gravel | 9 | 24 | 10 |
| | 92 | | | 19 | | | | | | | | |
| | 95 | | | | | | | | | | | |
| | 53 | | | | | | | | | | | |
| 45 | 56 | 45'-47' | D | 19 | 20 | 25 | Moist very dense | | | 10 | 24 | 11 |
| | 59 | | | 28 | | | | | | | | |
| | 99 | | | | | | | | | | | |
| | 90 | | | | | | | | | | | |
| 50 | 56 | 50'-52' | D | 21 | 23 | 21 | Moist dense | | | 11 | 24 | 6 |
| | 60 | | | 26 | | | | | | | | |
| | 55 | | | | | | | | | | | |
| | 67 | | | | | | | | | | | |
| 55 | 66 | 55'-57' | D | 25 | 27 | 27 | Moist/v dense | 57' | | 12 | 24 | 9 |
| | | | | 24 | | | | | | | | |
| 60 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

| | | | | |
|--|--|---|---|--|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>"CASING: THEN _____"</p> <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense</p> | <p>Cohesive Consistency 0-4 Soft 30 + Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> |
|--|--|---|---|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 40
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.7

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

| | | | | |
|--|--|---|--|--|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At <u>18'</u> after _____ Hours Casing all out</p> <p>At _____ after _____ Hours</p> | <p>Rods-"AW" Type _____ Size I.D. <u>4" & BX</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u></p> | <p>CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u></p> | <p>CORE BAR _____ BIT _____</p> | <p>START <u>10/14/71</u> o.m. COMPLETE <u>10/15/71</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>R. Faria</u> INSPECTOR _____ SOILS ENGR. _____</p> |
|--|--|---|--|--|

LOCATION OF BORING: Sasafra Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|---------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | | | Miscellaneous FILL | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 10 | | | | | | | 10' | | | | | |
| | | 10'-12' | D | 6 | 5 | 3 | Moist medium stiff | | Gray SILT & fine SAND, FILL | 1 | 24" | 18 |
| 15 | | | | | | | | 15' | | | | |
| | | 15'-17' | D | 5 | 3 | 2 | Moist stiff | | Gray ORGANIC SILT, some fine sand seams, trace of fine gravel | 2 | 24" | 20 |
| 20 | | | | | | | | 20' | | | | |
| | | 20'-22' | D | 6 | 7 | 7 | Moist medium dense | | Dark gray medium to fine SAND, some fine to medium gravel, little silt | 3 | 24" | 21 |
| 25 | | | | | | | | | | | | |
| | | 25'-27' | D | 13 | 10 | 16 | " | | | 4 | 24" | 20 |
| 30 | | | | | | | | 30' | | | | |
| | | 30'-32' | D | 12 | 14 | 13 | Moist medium dense | | Brown silty coarse to fine SAND, little fine gravel | 5 | 24" | 18 |
| 35 | | | | | | | | 35' | | | | |
| | | 35'-37' | D | 12 | 10 | 8 | Moist stiff | | Brown SILT, trace of fine sand | 6 | 24" | 20 |
| 40 | | | | | | | | 37'6" | | | | |
| | | 37'6"-39'6" | D | 34 | 21 | 19 | Moist dense | | Brown fine to medium SAND, some medium to fine gravel, little silt | 7 | 24" | 18 |

| | | | |
|--|---|--|--|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>74</u> Rock Coring _____ Samples <u>14</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 30+ Hard | HOLE NO. <u>40</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 40

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR | Date | Time |
|---|--------|---------|-----------|----------------------|------|
| At _____ after _____ Hours Type _____ | _____ | _____ | _____ | START _____ | a.r |
| At _____ after _____ Hours Size I.D. _____ | _____ | _____ | _____ | COMPLETE _____ | p.f |
| Hammer Wt. _____ | _____ | _____ | BIT _____ | TOTAL HRS. _____ | p.f |
| Hammer Fall _____ | _____ | _____ | _____ | BORING FOREMAN _____ | |
| | _____ | _____ | _____ | INSPECTOR _____ | |
| | _____ | _____ | _____ | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|----------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Re |
| | | (Washed & Drove BX to 72') | | | | | | | | | | |
| 45 | | 45'-47' | D | 7 17 | 16 | 15 | Moist dense | | Gray medium to fine SAND, some fine gravel, little silt | 8 | 24" | 20' |
| 50 | | 50'-52' | D | 13 14 | 15 | 16 | Moist very stiff | 50' | Brown SILT & fine to coarse SAND, trace of medium gravel | 9 | 24" | 19' |
| 55 | | 55'-57' | D | 10 15 | 14 | 15 | " | | | 10 | 24" | 20' |
| 60 | | 60'-62' | D | 23 18 | 22 | 15 | Moist hard | | Brown SILT & fine Sand, little fine to medium gravel | 11 | 24" | 19' |
| 65 | | 65'-67' | D | 22 30 | 27 | 30 | Moist very dense | 65' | Gray medium to fine SAND, little medium to fine gravel, little silt, sandy TILL | 12 | 24" | 20' |
| 70 | | 70'-72' | D | 22 30 | 22 | 30 | " | | | 13 | 24" | 22' |
| 75 | | 72'-74' | D | 20 41 | 33 | 37 | | 74' | Bottom of Boring 74'0" | 14 | 24" | 20' |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 40

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 2
 DATE _____
 HOLE NO. 41
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.2

| | | | |
|--|---|---|--|
| GROUND WATER OBSERVATIONS At <u>8'3"</u> after _____ Hours Casing At _____ after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> CORE BAR _____ BIT _____ | Date _____ Time _____ START <u>10/14/71</u> COMPLETE <u>10/15/71</u> TOTAL HRS. _____ BORING FOREMAN <u>A. Gomes</u> INSPECTOR _____ SOILS ENGR. _____ |
|--|---|---|--|

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Ret |
| 5 | | 0'-2' | D | 2 | 2 | 1 | Moist loose | | Gray brown fine to medium SAND, FILL | 1 | 24' | 10' |
| | | | | 1 | | | | | | | | |
| 10 | | 5'-7' | D | 4 | 4 | 1 | " | | Brown fine to coarse SAND, trace of silt, FILL (oil odor noted) | 2 | 24' | 12' |
| | | | | 1 | | | | | | | | |
| 15 | 4 | 10'-12' | D | 6 | 5 | 7 | Moist medium dense | 10' | Brown fine SAND, trace of silt and fine gravel (Oil odor noted) | 3 | 24' | 9' |
| | 13 | | | 8 | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 10 | 15'-17' | D | 8 | 8 | 13 | Moist dense | 16' | | 4 | 24' | 14' |
| 20 | 11 | | | | | | | | Brown fine SAND, trace of silt and fine gravel (Oil odor noted) | | | |
| | 12 | | | 14 | | | | | | | | |
| | 17 | | | | | | | | | | | |
| | 20 | 20'-22' | D | 16 | 10 | 15 | " | | | 5 | 24' | 9' |
| 25 | 20 | | | 19 | | | | | Brown fine SAND, trace of silt and fine gravel (Oil odor noted) | | | |
| | 23 | | | | | | | | | | | |
| | 27 | | | | | | | | | | | |
| | 32 | 25'-27' | D | 12 | 12 | 18 | " | | | 6 | 24' | 10' |
| 30 | 33 | | | 19 | | | | | Gray brown fine to coarse SAND and Silt, little fine to medium gravel, TILL | | | |
| | 40 | | | | | | | | | | | |
| | 35 | 30'-32' | D | 24 | 26 | 20 | Moist dense | 29' 6" | | 7 | 24' | 6' |
| | 37 | | | 23 | | | | | | | | |
| 35 | 40 | | | | | | | | Gray brown fine to coarse SAND and Silt, little fine to medium gravel, TILL | | | |
| | 37 | 35'-37' | D | 21 | 24 | 20 | Moist very dense | | | 8 | 24' | 8' |
| | 45 | | | 31 | | | | | | | | |
| | 43 | | | | | | | | | | | |
| 40 | 39 | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

| | | | | |
|--|---|---|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>52'</u> Rock Coring _____ Samples <u>11</u> |
|--|---|---|---|---|

HOLE NO. 41

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 41

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | g.m |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | g.m |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | p.m |
| | | | | | BIT | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 45 | 30 | 40'-42' | D | 22 | 21 | 20 | Moist dense | Gray brown fine to coarse SAND and Silt, little fine to medium gravel, TILL | 9 | 24" | 10" | |
| | 35 | | | 21 | | | | | | | | |
| | 50 | | | | | | | | | | | |
| | 85 | | | | | | | | | | | |
| | 58 | | | | | | | | | | | |
| 50 | 55 | 45'-47' | D | 22 | 26 | 28 | Moist very dense | Bottom of Boring 52'0" | 10 | 24" | 8" | |
| | 60 | | | 30 | | | | | | | | |
| | 62 | | | | | | | | | | | |
| 55 | 54 | | | | | | | | | | | |
| | 50 | 50'-52' | D | 24 | 32 | 42 | " | | 11 | 24" | - | |
| | | | | 36 | | | | | | | | |

| | | |
|--|---|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense |
| | | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | HOLE NO. 41 |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R. I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 2
 DATE _____
 HOLE NO. 42
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.7

| GROUND WATER OBSERVATIONS | | | | RODS-"AW" Type | CASING | SAMPLER | CORE BAR. | Date | Time | o.p. p.m. p.m. |
|---------------------------|-------------------|-------|------------|-------------------|--------|---------------|------------|---------------------------------|----------|----------------------|
| At | | after | Hours | | | | | START | COMPLETE | |
| At | <u>13'6"</u> | | <u>1/4</u> | | | <u>S/S</u> | | <u>10/15/71</u> | | |
| | <u>55' Casing</u> | | | | | <u>1 3/8"</u> | | <u>10/15/71</u> | | |
| At | <u>8'6"</u> | | | | | <u>140#</u> | | | | |
| | <u>No Casing</u> | | | | | <u>30"</u> | <u>BIT</u> | | | |
| | | | | | | | | BORING FOREMAN <u>A. Cortez</u> | | |
| | | | | | | | | INSPECTOR <u>R. Vacuum</u> | | |
| | | | | | | | | SOILS ENGR. _____ | | |

LOCATION OF BORING: Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 5 | -- | 0'-2' | D | 2 | 3 | 3 | Dry loose | 5' | Brown black fine to medium SAND & fine Gravel, some silt, FILL | 1 | 24' | 18' | |
| | 2 | | | 3 | | | | | | | | | |
| | 1 | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| 10 | 1 | 5'-7' | D | 1 | 2 | 5 | Wet loose | 10' | Brown fine to medium SAND, some silt & fine gravel, FILL | 2 | 24' | 20' | |
| | 3 | | | 2 | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| 15 | 3 | 10'-12' | D | 5 | 6 | 6 | Wet medium dense | 15' | Brown fine to medium SAND & Silt, some fine gravel, FILL | 3 | 24' | 8' | |
| | 5 | | | 7 | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| 20 | 15 | 15'-17' | D | 23 | 13 | 10 | Wet/m dense | 18' | Brown fine to coarse SAND, some fine gravel, little silt, FILL | 4 | 24' | 10' | |
| | 14 | | | 13 | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| 25 | 8 | 20'-22' | D | 10 | 8 | 6 | Wet stiff | 22' | Black brown SILT, trace of fine sand | 5 | 24' | 12' | |
| | 11 | | | 7 | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| 30 | 4 | 25'-26'6" | D | 14 | 11 | 12 | Wet/m dense | 26'6" | Brown fine to coarse SAND, some silt, little fine gravel, FILL | 6 | 13' | 18' | |
| | 11 | 26'6"-27' | D | 11 | | | " | | | | 6A | 6" | 6" |
| | 14 | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| 35 | 7 | 30'-32' | D | 11 | 18 | 20 | Wet dense | 30' | Black fine SAND, some organic silt, trace of fine gravel | 7 | 24' | 20' | |
| | 9 | | | 22 | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| 40 | 31 | 35'-37' | D | 35 | 77 | 33 | Wet hard | 34' | Gray black SILT, some fine to coarse gravel, cobbles | 8 | 24' | 12' | |
| | 23 | | | 20 | | | | | | | | | |
| | 25 | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 57
 Rock Coring _____
 Samples 12

HOLE NO. 42

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 42

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | BIT _____ | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From- To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec | |
| 45 | 9 | 40'-42' | D | 20 | 11 | 16 | Wet dense | 43' | Gray fine SAND, trace of silt | 9 | 24' | 18" | |
| | 12 | | | 25 | | | | | | | | | |
| | 24 | | | | | | | | | | | | |
| | 60 | | | | | | | | | | | | |
| | 75 | | | | | | | | | | | | |
| 50 | 40 | 45'-47' | D | 63 | 65 | 31 | Wet very dense | | Brown fine to coarse SAND and fine to medium Gravel, some silt | 10 | 24' | 24" | |
| | 30 | | | 34 | | | | | | | | | |
| | 44 | | | | | | | | | | | | |
| | 46 | | | | | | | | | | | | |
| 55 | 17 | 50'-52' | D | 3 | 12 | 24 | " | | Brown gray fine to coarse SAND & fine to medium gravel, some silt | 11 | 24' | 6" | |
| | 22 | | | 29 | | | | | | | | | |
| | 34 | | | | | | | | | | | | |
| | 41 | | | | | | | | | | | | |
| 60 | 36 | 55'-57' | D | 31 | 21 | 20 | Wet dense | 57' | Gray fine to coarse SAND & Gravel, some silt Bottom of Boring 57'0" | 12 | 24' | 12" | |
| | | | | 22 | | | | | | | | | |
| | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 42

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

DATE _____

HOLE NO. 43

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.0

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | | RODS-"AW" | CASING | SAMPLER | CORE BAR. | Date | Time | |
|---------------------------|-----------------------|-------|--|------------------------|-------------|---------------|-----------|--------------------------------|------|------|
| At <u>9'</u> | after _____ | Hours | | Type _____ | | <u>S/S</u> | | START <u>10/12/71</u> | | a.m. |
| | <u>Casing at 80'</u> | | | Size I.D. _____ | <u>BX</u> | <u>1 3/8"</u> | | COMPLETE <u>10/13/71</u> | | p.m. |
| At <u>8'</u> | after <u>3</u> | Hours | | Hammer Wt. <u>300#</u> | <u>140#</u> | | BIT | TOTAL HRS. _____ | | |
| | <u>Casing all out</u> | | | Hammer Fall <u>24"</u> | <u>30"</u> | | | BORING FOREMAN <u>R. Faria</u> | | |
| | | | | | | | | INSPECTOR _____ | | |
| | | | | | | | | SOILS ENGR. _____ | | |

LOCATION OF BORING: Sasafra Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | | | 5 | 6 | 0'-1' | | | | D | 2 | 2 |
| | 10 | 1'-2' | D | 5 | 6 | | Moist medium dense | | Brown fine to medium SAND, little silt, trace of fine to medium gravel, FILL | 1B | 12" | 12" |
| | 13 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 13 | | | | | | | | | | | |
| | 8 | | | | | | | | | | | |
| | 8 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| 10 | 5 | | | | | | | 10' | | | | |
| | 2 | 10'-12' | D | 4 | 4 | 4 | Wet loose | | Gray fine to medium SAND, little silt, trace of fine gravel (fuel odor noted) FILL | 2 | 24" | 16" |
| | 2 | | | 4 | | | | | | | | |
| | 5 | | | | | | | 14' | | | | |
| | 6 | | | | | | Moist/v stiff | | Black SILT, trace of fine gravel, FILL | 3 | 18" | 12" |
| 15 | 4 | 15'-16'6" | D | 10 | 11 | 13 | | 16'6" | | | | |
| | 6 | | | | | | | | | | | |
| | 7 | 16'6"-18' | D | 12 | 12 | 15 | Moist very stiff | | Black SILT, little fine gravel | 4 | 18" | 15" |
| | 6 | | | | | | | | | | | |
| 20 | 18 | 20'-22' | ST | 6 | 8 | 11 | | | | ST | 25" | 14" |
| | 20 | | | 11 | | | | | | | | |
| | 21 | 22'-24' | D | 11 | 14 | 15 | Moist hard | | Brown SILT, little fine sand | 5 | 24" | 18" |
| | 22 | | | 16 | | | | | | | | |
| 25 | 24 | | | | | | | | | | | |
| | 19 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 31 | | | | | | | | | | | |
| 30 | 32 | | | | | | | 30' | | | | |
| | 16 | 30'-32' | D | 6 | 6 | 7 | Moist medium dense | | Gray coarse to fine SAND, some fine gravel, trace of silt | 6 | 24" | 19" |
| | 22 | | | 8 | | | | | | | | |
| | 24 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | |
| 35 | 26 | | | | | | | 35' | | | | |
| | 18 | 35'-37' | D | 10 | 14 | 10 | Moist medium dense | | Black coarse to fine SAND, some medium to fine gravel, trace of silt (oil odor noted) | 7 | 24" | 14" |
| | 24 | | | 10 | | | | | | | | |
| | 26 | | | | | | | | | | | |
| 40 | 27 | | | | | | | | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | SUMMARY: Earth Boring <u>82'</u> Rock Coring _____ Samples <u>16</u> HOLE NO. <u>43</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 43

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | p.m. |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|---|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 45 | 20 | 40'-42' | D | 4 | 7 | 10 | Wet medium dense | 45' | Brown fine SAND & Silt | 8 | 24' | 20' |
| | 28 | | | 12 | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 32 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| 50 | 24 | 45'-47' | D | 5 | 10 | 11 | Wet medium dense | 70' | Brown fine SAND, some silt | 9 | 24' | 18' |
| | 28 | | | 11 | | | | | | | | |
| | 32 | | | | | | | | | | | |
| | 34 | | | | | | | | | | | |
| 55 | 30 | 50'-52' | D | 4 | 7 | 10 | " | 70' | " | 10 | 24' | 19' |
| | 42 | | | 10 | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 56 | | | | | | | | | | | |
| | 58 | | | | | | | | | | | |
| 60 | 58 | 55'-57' | D | 3 | 4 | 6 | " | 70' | " | 11 | 24' | 18' |
| | 54 | | | 7 | | | | | | | | |
| | 57 | (Used 300 lb. & 140 lb. to drive casing 55' to 70') | | | | | | | | | | |
| | 70 | | | | | | | | | | | |
| | 74 | | | | | | | | | | | |
| 65 | 38 | 60'-62' | D | 3 | 4 | 5 | " | 70' | " | 12 | 24' | 20' |
| | 52 | | | 5 | | | | | | | | |
| | 56 | | | | | | | | | | | |
| | 62 | | | | | | | | | | | |
| | 68 | | | | | | | | | | | |
| 70 | 57 | 65'-67' | D | 4 | 6 | 6 | " | 70' | " | 13 | 24' | 16' |
| | 52 | | | 7 | | | | | | | | |
| | 55 | | | | | | | | | | | |
| | 45 | | | | | | | | | | | |
| | 50 | | | | | | | | | | | |
| 75 | 33 | 70'-72' | D | 16 | 16 | 22 | Wet dense | 70' | " | 14 | 24' | 17' |
| | 56 | | | 24 | | | | | | | | |
| | 74 | | | | | | | | | | | |
| | 80 | | | | | | | | | | | |
| | 85 | | | | | | | | | | | |
| 80 | 60 | 75'-77' | D | 15 | 24 | 26 | " | 70' | " | 15 | 24' | 19' |
| | 74 | | | 23 | | | | | | | | |
| | 92 | | | | | | | | | | | |
| | 96 | | | | | | | | | | | |
| 110 | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff
 30+ Hard

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO 43

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

SHEET 1 OF 2
 DATE _____
 HOLE NO. 50-A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 8.9

| | | | | | | | | |
|---------------------------|-------------------|---|----------------------|---------------|----------------|------------------|------|-------------|
| GROUND WATER OBSERVATIONS | | Rods-"AW" Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | CASING _____ | SAMPLER _____ | CORE BAR _____ | Date | Time | |
| At <u>8'8"</u> | after _____ Hours | | START <u>9/29/71</u> | <u>S/S</u> | | | | <u>9:00</u> |
| At _____ | after _____ Hours | COMPLETE <u>9/30/71</u> | <u>2 1/2"</u> | <u>1 3/8"</u> | | TOTAL HRS. _____ | | |
| | | BORING FOREMAN <u>A. Gomes</u> | <u>300#</u> | <u>140#</u> | BIT _____ | INSPECTOR _____ | | |
| | | SOILS ENGR. _____ | <u>24"</u> | <u>30"</u> | | | | |

LOCATION OF BORING: Sasafraz Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|--------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 5 | 2 | 0'-1' | D | 2 | 5 | | D/loose | 1' | Black COAL, CINDERS, FILL | 1 | 12" | 12' |
| | 5 | 1'-2' | D | 10 | 6 | | Moist medium dense | | Brown fine to medium SAND and Silt, trace of fine to coarse gravel, FILL | 1A | 12" | 12' |
| | 10 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | |
| 10 | 4 | 5'-6'6" | D | 6 | 6 | 5 | Wet medium dense | | | 2 | 18" | 10' |
| | 9 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| 15 | 8 | | | | | | | | No Recovery | - | 24" | 0' |
| | 4 | 10'-12' | D | 10=12" | 4=12" | | " | | | 3 | 24" | 9' |
| | 3 | | | | | | | | | | | |
| | 7 | 12'-14' | D | 8 | 9 | 8 | | | | | | |
| 20 | 4 | | | 5 | | | | 15' | | | | |
| | 4 | 15'6"-17' | D | 3 | 2 | 2 | Wet soft | | Gray brown ORGANIC SILT, trace of brown peat | 4 | 18" | 14' |
| | 6 | | | | | | | 18' | | | | |
| | 20 | | | | | | | | | | | |
| 25 | 7 | 20'-22' | D | 20=12" | 22=12" | | | | Missed Sample | - | 24" | 0' |
| | 12 | | | | | | | | | | | |
| | 12 | | | | | | Wet medium dense | | Gray fine to coarse SAND, some silt, little fine to medium gravel | 5 | 24" | 20' |
| | 13 | | | | | | | | | | | |
| 30 | 11 | 25'-27' | D | 4 | 8 | 8 | | 27' | | | | |
| | 12 | | | 7 | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 24 | | | | | | Moist hard | | Brown SILT, little very fine sand | 6 | 24" | 11' |
| 35 | 25 | 30'-32' | D | 11 | 14 | 24 | | 33' | | | | |
| | 35 | | | 13 | | | | | | | | |
| | 47 | | | | | | | | | | | |
| | 40 | | | | | | | | | | | |
| 40 | 70 | 35'-37' | D | 33 | 26 | 22 | Moist very dense | | Gray brown fine to coarse SAND & Gravel with some silt | 7 | 24" | 10' |
| | 35 | | | 24 | | | | | | | | |
| | 58 | | | | | | | | | | | |
| | 88 | | | | | | | | | | | |
| 69 | | | | | | | | | | | | |

| | | | |
|--|---|---|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | | Earth Boring <u>62'</u> Rock Coring _____ Samples <u>12</u> |
| | | | HOLE NO <u>50-A</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 50-A

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. 2562
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | |
|--|---|--|
| <p>GROUND-WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>SAMPLER _____</p> <p>CORE BAR _____</p> <p>Type _____</p> <p>Size I. D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p>START _____ a.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|--------|----------|------------------------------|--|---|--------|------|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| 45 | 30 | 40'-42' | D | 27 | 28 | 26 | Moist very dense | Gray brown fine to coarse SAND & Gravel with some silt | 8 | 24' | 10' | |
| | 35 | | | 25 | | | | | | | | |
| | 58 | | | | | | | | | | | |
| | 84 | | | | | | | | | | | |
| | 69 | | | | | | | | | | | |
| 50 | 24 | 45'-47' | D | 20 | 30 | 24 | " | | 9 | 24' | 11' | |
| | 28 | | | 28 | | | | | | | | |
| | 45 | | | | | | | | | | | |
| | 77 | | | | | | | | | | | |
| 55 | 126 | 50'-50'9" | D | 48 | 110/3" | | " | | 10 | 9" | -- | |
| | 253 | | | | | | | | | | | |
| | 200 | | | | | | | | | | | |
| 60 | 61 | 55'5"-57'6" | D | 49 | 66 | 49 | 140# O. E. | | 11 | 24' | -- | |
| | | | | 41 | | | | | | | | |
| 65 | | 60'-61'6" | D | 49 | 43 | 68 | 140# O. E. | Gray medium to fine SAND, little silt & gravel | 12 | 12' | -- | |
| | | 61'6"-62' | D | 92 | | | | | | 12A | 6" | -- |
| | | | | | | | | Bottom of Boring 62'0" | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | | HOLE NO. <u>50-A</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 51

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | |
|--|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR.</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date _____ Time _____</p> <p>START _____ a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____</p> |
|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Re. | |
| 45 | 22 | 40'-42' | D | 31 | 35 | 40 | Moist very dense | 45' | Brown fine to coarse SAND, some silt & fine to coarse gravel | 8 | 24" | 9" | |
| | 58 | | | 31 | | | | | | | | | |
| | 75 | | | | | | | | | | | | |
| | 156 | | | | | | | | | | | | |
| | 127 | | | | | | | | | | | | |
| 50 | 34 | 45'-47' | D | 28 | 17 | 19 | Wet dense | 48' | Brown fine SAND, trace of fine gravel & silt | 9 | 24" | 16" | |
| | 24 | | | 17 | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| | 47 | | | | | | | | | | | | |
| 55 | 68 | | | | | | Wet very dense | | Brown fine to coarse SAND & fine to medium gravel with some silt | 10 | 24" | 31" | |
| | 42 | 55'-57' | D | 48 | 22 | 23 | | | | | | | |
| | 50 | | | 25 | | | | | | | | | |
| 60 | 87 | | | | | | " | | | 11 | 24" | 9" | |
| | 42 | 55'-57' | D | 31 | 33 | 53 | | | | | | | |
| | 90 | | | 80 | | | | | | | | | |
| | 99 | | | | | | | | | | | | |
| 65 | 59 | | | | | | " | | | 12 | 24" | 10" | |
| | 77 | 60'-62' | D | 38 | 46 | 66 | | | | | | | |
| 70 | | | | | | | 140# O.E. 67' | | Bottom of Boring 67'0" | 13 | 24" | -- | |
| | | 65'-67' | D | 55 | 47 | 42 | | | | | | | |

| | | | | | |
|--|--|--|--|---|---------------------------|
| <p>GROUND SURFACE TO _____</p> <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>"CASING: THEN _____</p> <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense</p> | <p>Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> | <p>HOLE NO. <u>51</u></p> |
|--|--|--|--|---|---------------------------|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 3

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Tank Site (Prov. Gas Co.) LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. 2663
 SAMPLES SENT TO " OUR JOB NO. 71-396

DATE _____
 HOLE NO. 52
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.0

| | | | | |
|--|---|---|------------------|--|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>0</u> Hours At _____ after _____ Hours | CASING Type <u>Rods-"AW"</u> Size I.D. <u>S/S</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. BIT | Date _____ Time _____ START <u>10/4/71</u> COMPLETE <u>10/6/71</u> TOTAL HRS. _____ BORING FOREMAN <u>A. Gomes</u> INSPECTOR _____ SOILS ENGR. _____ |
|--|---|---|------------------|--|

LOCATION OF BORING: Sassafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|------------------|-----|---|---|-----|----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Re | | | | |
| 5 | 1 | 0'-2' | D | 4 | 4 | 6 | Moist medium dense | 3' | Brown fine to medium SAND, trace of F-C gravel, cinders & concrete, FILL | 1 | 24" | 4" | | | | |
| | 5 | | | 9 | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | |
| 10 | 19 | 5'-7' | D | 10 | 11 | 12 | Moist medium dense | " | Brown fine to coarse SAND, trace of fine to medium gravel & silt | 2 | 24" | 10" | | | | |
| | 25 | | | 15 | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | |
| 15 | 14 | 10'-12' | D | 14 | 11 | 7 | " | " | Brown fine to coarse SAND & fine to medium gravel with some silt | 3 | 24" | 10" | | | | |
| | 15 | | | 8 | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | | | |
| 20 | 8 | 15'-17' | D | 10 | 18 | 17 | Wet dense | " | " | 4 | 24" | 11" | | | | |
| | 21 | | | 21 | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | | | |
| 25 | 23 | 20'-22' | D | 23 | 21 | 20 | " | " | " | 5 | 24" | 12" | | | | |
| | 26 | | | 13 | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | | |
| 30 | 14 | 25'-27' | D | 14 | 19 | 20 | Wet dense | " | " | 6 | 24" | 10" | | | | |
| | 28 | | | 14 | | | | | | | | | | | | |
| | 15 | | | 27'-29' | D | 9 | 7 | | | 6 | Wet medium dense | " | " | 7 | 24" | 4" |
| | 10 | | | | | 5 | | | | | | | | | | |
| 35 | 14 | 30'-32' | D | 10 | 11 | 12 | " | " | " | 8 | 24" | 10" | | | | |
| | 14 | | | 12 | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | | |
| 40 | 29 | 35'-37' | D | 16 | 14 | 22 | Wet dense | " | " | 9 | 24" | 1" | | | | |
| | 24 | | | 22 | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | |

| | | | | |
|--|---|--|---|---|
| GROUND SURFACE TO _____ USED _____ "CASING: THEN _____ | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>82'</u> Rock Coring _____ Samples <u>18</u> |
|--|---|--|---|---|

HOLE NO. 52

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3
 DATE _____
 HOLE NO. 52
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-396

| | | | | | |
|---|--|---------------------------------|--------------------------------------|--------------------------|---|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | CASING _____ Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | SAMPLER _____ _____ _____ | CORE BAR _____ _____ BIT _____ | Date _____ Time _____ | START _____ o.p. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|--|---------------------------------|--------------------------------------|--------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|-------|-----------|------------------------------|---------------------|---|--------|------|------|
| | | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen. | Rec. |
| 45 | 21 | 40'-42' | D | 16 | 18 | 18 | Wet dense | 55' | Brown gray fine to coarse SAND & fine to medium gravel with some silt (Petroleum Odor Noted) | 10 | 24' | 10' |
| | 34 | | | 19 | | | | | | | | |
| | 50 | | | | | | | | | | | |
| | 49 | | | | | | | | | | | |
| 50 | 34 | 45'-47' | D | 61 | 46 | 30 | Wet very dense | 55' | | 11 | 24' | 12' |
| | 50 | | | 45 | | | | | | | | |
| | 65 | | | | | | | | | | | |
| | 60 | | | | | | | | | | | |
| 55 | 44 | 50'-52' | D | 31 | 43 | 32 | " | 55' | | 12 | 24' | 9' |
| | 45 | | | 41 | | | | | | | | |
| | 46 | | | | | | | | | | | |
| | 60 | | | | | | | | | | | |
| 60 | 47 | 55'-57' | D | 15 | 19 | 22 | Wet hard | 58' | Gray SILT & fine Sand, trace of gravel | 13 | 24' | 11'' |
| | 43 | | | 23 | | | | | | | | |
| | 45 | | | | | | | | | | | |
| | 59 | | | | | | | | | | | |
| 65 | 47 | 60'-62' | D | 21 | 25 | 25 | Wet hard | 69' | Gray SILT with some fine sand | 14 | 24' | 10'' |
| | 38 | | | 30 | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 60 | | | | | | | | | | | |
| 70 | 60 | 65'-67' | D | 19 | 22 | 34 | " | 69' | | 15 | 24' | 9'' |
| | 65 | | | 37 | | | | | | | | |
| | 73 | | | | | | | | | | | |
| | 94 | | | | | | | | | | | |
| 75 | 109 | 70'-72' | D | 5 | 12 | 13 | Wet dense | 74'6" | Gray fine sandy SILT | 16 | 24' | 13'' |
| | 60 | | | 19 | | | | | | | | |
| | 62 | | | | | | | | | | | |
| | 72 | | | | | | | | | | | |
| 80 | 82 | 75'-77' | D | 27 | 14 | 21 | Wet dense | | Gray silty fine to coarse SAND, some fine to medium gravel | 17 | 24' | 13'' |
| | 59 | | | 27 | | | | | | | | |
| | 56 | | | | | | | | | | | |
| | 80 | | | | | | | | | | | |
| 117 | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50 + Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 52

American Drilling & Boring Co., Inc.

1000 WATER STREET EAST PROVIDENCE, R.I.

SHEET 1 OF 3

DATE _____

HOLE NO. 53

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.3

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Tank Site (Prov. Gas Co.)

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. 2663

SAMPLES SENT TO "

OUR JOB NO. 71-396

| | | | | | | |
|----------------------------|-------------------|---------------|----------------|------------------|--------------------------|------|
| GROUND WATER OBSERVATIONS: | | Casing: _____ | SAMPLER: _____ | CORE BAR: _____ | START: 10/5/71 | o.m. |
| At 10' after 18 Hours: | Rods-"AW" | | | | COMPLETE: 10/6/71 | p.m. |
| 80' Casing | Type _____ | BW | S/S | TOTAL HRS: _____ | BORING FOREMAN A. Cortez | |
| At 10' after 1 1/2 Hours: | Size I.D. _____ | 300# | 140# | INSPECTOR: _____ | SOILS ENGR: _____ | |
| No Casing | Hammer Wt. _____ | 24" | 30" | BIT: _____ | | |
| | Hammer Fall _____ | | | | | |

LOCATION OF BORING:

Sasafras Point

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION: Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|--|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 4 | | 0'-2' | D | 4 | 10 | 20 | Dry dense | | Black CINDERS, Brown fine to medium SAND & Gravel, FILL | 1 | 24" | 14" |
| 18 | | | | 20 | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 17 | | | | | | | | 5' | | | | |
| 14 | | 5'-7' | D | 8 | 11 | 9 | Dry/m dense | | Brown fine to medium SAND & Gravel, trace of silt | 2 | 24" | 24" |
| 16 | | | | 11 | | | | | | | | |
| 18 | | | | | | | | 8' | | | | |
| 11 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 9 | | 10'-12' | D | 6 | 5 | 4 | Wet loose | | Brown fine to coarse SAND, some silt, little fine to medium gravel | 3 | 24" | 16" |
| 11 | | | | 4 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 15 | | | | | | | | 15' | | | | |
| 8 | | 15'-17' | D | 6 | 8 | 6 | Wet medium dense | | Brown fine to coarse SAND, some silt & fine to medium gravel | 4 | 24" | 10" |
| 12 | | | | 12 | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 13 | | 20'-22' | D | 14 | 11 | 12 | " | | | 5 | 24" | 12" |
| 20 | | | | 14 | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 24 | | | | | | | | 25' | | | | |
| 17 | | 25'-27' | D | 5 | 14 | 19 | Wet dense | | Brown fine to coarse SAND & Silt, some fine gravel | 6 | 24" | 18" |
| 26 | | | | 15 | | | | | | | | |
| 41 | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 22 | | 30'-32' | D | 9 | 11 | 15 | " | | | 7 | 24" | 22" |
| 36 | | | | 16 | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | |
| 35 | | | | | | | | 34' | | | | |
| 71 | | | | | | | | | | | | |
| 31 | | 35'-37' | D | 30 | 35 | 36 | Wet very dense | | Black gray fine to medium SAND, some silt & fine gravel, cobbles | 8 | 24" | 10" |
| 57 | | | | 39 | | | | | | | | |
| 100 | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____

"CASING: THEN _____

Sample Type

D=Dry C=Cored W=Washed

UP=Undisturbed Piston

TP=Test Pit A=Auger V=Vane Test

UT=Undisturbed Thinwall

Proportions Used

trace 0 to 10%

little 10 to 20%

some 20 to 35%

and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0-10 Loose

10-30 Med. Dense

30-50 Dense

50+ Very Dense

Cohesive Consistency

0-4 Soft 30+ Hard

4-8 M/Stiff

8-15 Stiff

15-30 V-Stiff

SUMMARY:

Earth Boring 82'

Rock Coring _____

Samples 17

HOLE NO 53

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 11/16/71
 HOLE NO. 60
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

TO HALEY & Aldrich INC. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken At Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | Date | Time |
|-------------------------------------|-------------------|------------------------------|---------------|----------|------------------------------|------|
| At <u>9'</u> after <u>1/2</u> Hours | | Type Rods - <u>"AW"</u> | <u>S/S</u> | | START <u>11/16/71</u> | |
| At _____ after _____ Hours | <u>50' Casing</u> | Size I.D. <u>4" + 2 1/2"</u> | <u>1 3/8"</u> | | COMPLETE _____ | |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT | TOTAL MRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>Cortez</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|------------|-----------------------|-------------------------|----------------|-------------------------|----------|----------|-----------------------------|---------------------|---|------------|------------|------------|------------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Ret. | |
| | | <u>Probe 5'</u> | | | | | | | | | | | |
| <u>11</u> | | <u>5'-6'6"</u> | <u>D</u> | <u>3</u> | <u>2</u> | <u>3</u> | <u>Wet Loose</u> | | <u>Black Cinders Med To Fine SAND, Fill</u> | <u>1</u> | <u>18'</u> | <u>10'</u> | |
| <u>34</u> | | | | | | | | | <u>Trace of Coarse SAND, Oil Soaked</u> | | | | |
| <u>21</u> | | | | | | | | | | | | | |
| <u>23</u> | | | | | | | | | | | | | |
| <u>24</u> | | | | | | | | | | | | | |
| <u>11</u> | | <u>10'-11'6"</u> | <u>D</u> | <u>5</u> | <u>5</u> | <u>4</u> | <u>" "</u> | | | <u>2</u> | <u>10'</u> | <u>8"</u> | |
| <u>10</u> | | | | | | | | | | | | | |
| <u>9</u> | | | | | | | | <u>13'</u> | | | | | |
| <u>3</u> | | | | | | | | | | | | | |
| <u>W/H</u> | | | | | | | | | <u>Lost Sample</u> | | | | |
| <u>4</u> | | <u>15'-16'6"</u> | <u>D</u> | <u>1</u> | <u>1</u> | <u>1</u> | | <u>16'</u> | <u>Gray Fine To Med. SAND, in Wash - Fill -</u> | | | | |
| <u>6</u> | | | | | | | | | | | | | |
| <u>5</u> | | <u>16'6"-20'</u> | <u>D</u> | <u>1</u> | <u>2</u> | <u>1</u> | <u>Wet Soft</u> | | <u>Gray Brown Org. Silt, with Fine Sand</u> | <u>3</u> | <u>40'</u> | <u>40'</u> | |
| <u>6</u> | | | <u>1</u> | <u>3</u> | <u>3</u> | <u>3</u> | | | | | | | |
| <u>4</u> | | | | | | | | | | | | | |
| <u>22</u> | | <u>20'-22'</u> | <u>UT</u> | <u>Press</u> | | | | | | <u>UT-</u> | <u>1</u> | <u>24'</u> | <u>10'</u> |
| <u>17</u> | | | | | | | | | | | | | |
| <u>17</u> | | <u>22'6"-24'</u> | <u>6"</u> | <u>UP Press</u> | | | | | | <u>UP-</u> | <u>1</u> | <u>24'</u> | <u>80'</u> |
| <u>18</u> | | | | | | | | | | | | | |
| <u>22</u> | | <u>24'6"-26'</u> | <u>D</u> | <u>1</u> | <u>1</u> | <u>1</u> | | | <u>Gray Org. SILT, Traces to Little Peat</u> | <u>4</u> | <u>15'</u> | <u>10'</u> | |
| <u>29</u> | | | | | | | | | | | | | |
| <u>20</u> | | <u>27'-29'</u> | <u>UP</u> | <u>Pressed</u> | | | | | | <u>UP-</u> | <u>2</u> | <u>14"</u> | <u>20'</u> |
| <u>21</u> | | | | | | | | | | | | | |
| <u>23</u> | | <u>29'-30'6"</u> | <u>D</u> | <u>2</u> | <u>2</u> | <u>2</u> | | | | <u>5</u> | <u>18'</u> | <u>10'</u> | |
| <u>24</u> | | | | | | | | | | | | | |
| <u>37</u> | | | | | | | | | | | | | |
| <u>30</u> | | | | | | | | | | | | | |
| <u>27</u> | | | | | | | | | | | | | |
| <u>41</u> | | | | | | | | | | | | | |
| <u>33</u> | | | | | | | | <u>35'</u> | | | | | |
| <u>41</u> | | <u>35'-36'6"</u> | <u>D</u> | <u>8</u> | <u>7</u> | <u>9</u> | <u>Wet</u> | | <u>Gray Coarse to Med. SAND, Fine to Med. Gravel, Little Silt</u> | <u>6</u> | <u>18'</u> | <u>10'</u> | |
| <u>32</u> | | | | | | | | | | | | | |
| <u>33</u> | | | | | | | | | | | | | |
| <u>47</u> | | | | | | | | | | | | | |
| <u>106</u> | | | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY
 Earth Boring 52'6"
 Rock Coring _____
 Samples 10

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 60

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ |
| | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | INSPECTOR _____ | _____ |
| | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|-------|-----------|------------------------------|---------------------|---|--------|------|-----|
| | | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen. | Re. |
| | 28 | 40'-41'6" | D | 18 | 18 | 15 | Wet Dense | | Gray Med. to Fine Sand, Fine gravel, Little Silt, Cobbles | 7 | 18" | 11 |
| | 33 | | | | | | | | | | | |
| | 31 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | |
| | 33 | | | | | | | | | | | |
| | 30 | 45'-46'6" | D | 9 | 11 | 13 | Moist Dense | | | 8 | 18" | 11 |
| | 31 | | | | | | | | | | | |
| | 28 | | | | | | | | | | | |
| | 29 | | | | | | | | | | | |
| | | 49'-50'6" | D | 13 | 10 | 9 | | | | 9 | 18" | 11 |
| | | | | | | | | | | | | |
| | | 50'6"-52'6" | D | 8 | 8 | 7 | | 52'6" | | 10 | 24" | 18 |
| | | | | | | | | | | | | |
| | | | | | | | | | Bottom of Boring at 52'6" | | | |
| | | | | | | | | | 0'-40' Used 4" Casing | | | |
| | | | | | | | | | 40'-50' 2½" Casing | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwall | Proportions Used Trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| TOWN PRESS - EAST PROV. | | | HOLE NO. <u>60</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE 11/15/71

HOLE NO. 61

LINE & STA. _____

OFFSET _____

SURF. ELEV. 7.5'

TO Haley & Aldrich Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence, Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|------------------------|---------------|-----------|-----------------------------|-------------|
| At <u>6'-8'</u> | after _____ Hours | Type <u>RODS-"AW"</u> | <u>S/S</u> | _____ | START <u>11/15/71</u> | <u>a.m.</u> |
| At _____ | after _____ Hours | Size I.D. <u>H+BW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>11/17/71</u> | <u>p.m.</u> |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | | BORING FOREMAN <u>Gomes</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|-----------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 7 | | 0'-1'6" | D | 4 | 5 | 6 | Moist Loose | | Black Cinders & Ashes, Fill | 1 | 18" | 11" |
| 7 | | | | | | | | 3' | | | | |
| 8 | | | | | | | Moist | | Brown Peat Mixed with Sand, Cinders, Fill | | | |
| 5 | | | | | | | | 8' | | | | |
| 6 | | | | | | | | | | | | |
| 3 | | 5'-6'6" | D | 2 | 1 | 1 | | | | 2 | 18" | 9" |
| 4 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | | | Loose Wet | | Fine to Med. SAND, Few Small Gravel, Trace Silt | | | |
| 7 | | | | | | | | | | | | |
| 9 | | 10'-11'6" | D | 8 | 6 | 4 | | | | 3 | 18" | 6" |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | -Fill- | | | |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 27 | | 15'-16' | D | 10 | 4 | | | 16' | | 4 | 18" | 6" |
| 13 | | 16'-16'6" | D | 3 | | | | | Organic Silt | 4A | 6" | 4" |
| 13 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 20 | | 19'-21' | S | | | | | 21' | Pressed 2" Shelby No Rec. | | | |
| 26 | | | | | | | | | Med. Comp. Gr. Gravel, Med. to Fine Sand, Silt, Shells | 5 | 24" | 10" |
| 32 | | 21'-23' | D | 13 | 19 | 10 | Moist M.D. | | | | | |
| 27 | | | | 14 | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 90 | | 25'-26'6" | D | 18 | 14 | 10 | | | | 6 | 18" | 8" |
| 121 | | | | | | | | | | | | |
| 73 | | | | | | | | | | | | |
| 84 | | | | | | | | | | | | |
| 97 | | | | | | | | | | | | |
| 20 | | 30'-31'6" | D | 30 | 28 | 24 | | | Boulders Fragments | 7 | 18" | 6" |
| 62 | | 31'6"-33' | D | 17 | 21 | 29 | | | Brown Gravel, Coarse to Fine Sand, Silt | 8 | 18" | 10" |
| 80 | | | | | | | | | | | | |
| 76 | | | | | | | | | | | | |
| 104 | | | | | | | | | | | | |
| 47 | | 35'-36'6" | D | 20 | 27 | 33 | | | | 9 | 18" | 10" |
| 63 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |

GROUND SURFACE TO 46'6" USE 30" H CASING: THEN 45' - 50'

| | | | | | |
|--|---|--|--|-----------|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | 30 + Hard | SUMMARY: Earth Boring <u>40'6"</u> Rock Coring <u>0</u> Samples <u>11</u> |
|--|---|--|--|-----------|--|

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 61

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| | | |
|---|---|--|
| <p>GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING _____</p> <p>SAMPLER _____</p> <p>CORE BAR _____</p> <p>BIT _____</p> | <p style="text-align: right;">Date _____ Time _____</p> <p>START _____ a.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|---|---|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| 11 | | 40'-41'6" | D | 10 | 24 | 29 | Moist Dense | | Brown Gravel, Coarse to Fine Sand, Trace, Silt | 10 | 18 | 10 |
| 28 | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| | | 45'-46'6" | D | 17 | 20 | 26 | | 46'6" | Bottom of Boring at 46'6" | 11 | 19 | 11 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

| <p>GROUND SURFACE TO _____</p> <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>USED _____</p> <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>"CASING: THEN _____</p> <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Cohesionless Density</th> <th>Cohesive Consistency</th> </tr> <tr> <td>0-10 Loose</td> <td>0-4 Soft 30 + Hard</td> </tr> <tr> <td>10-30 Med. Dense</td> <td>4-8 M/Stiff</td> </tr> <tr> <td>30-50 Dense</td> <td>8-15 Stiff</td> </tr> <tr> <td>50 + Very Dense</td> <td>15-30 V-Stiff</td> </tr> </table> | Cohesionless Density | Cohesive Consistency | 0-10 Loose | 0-4 Soft 30 + Hard | 10-30 Med. Dense | 4-8 M/Stiff | 30-50 Dense | 8-15 Stiff | 50 + Very Dense | 15-30 V-Stiff | <p>SUMMARY:</p> <p>Earth Boring _____</p> <p>Rock Coring _____</p> <p>Samples _____</p> <p style="text-align: center;">HOLE NO. 61</p> |
|--|--|--|----------------------|----------------------|------------|--------------------|------------------|-------------|-------------|------------|-----------------|---------------|--|
| Cohesionless Density | Cohesive Consistency | | | | | | | | | | | | |
| 0-10 Loose | 0-4 Soft 30 + Hard | | | | | | | | | | | | |
| 10-30 Med. Dense | 4-8 M/Stiff | | | | | | | | | | | | |
| 30-50 Dense | 8-15 Stiff | | | | | | | | | | | | |
| 50 + Very Dense | 15-30 V-Stiff | | | | | | | | | | | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

SHEET 1 OF 3
 DATE 10/8/71
 HOLE NO. 62
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|------------------------------|---------------|-----------------------------|-----------|-------|-------|
| At <u>8'-9'</u> | after _____ Hours | Type RODS - <u>"AW"</u> | <u>S/S</u> | START <u>11/8/71</u> | _____ | _____ | _____ |
| At _____ | after _____ Hours | Size I.D. <u>4" H-2 1/2"</u> | <u>1 3/8"</u> | COMPLETE <u>11/15/71</u> | _____ | _____ | _____ |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | TOTAL HRS. _____ | | | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | BORING FOREMAN <u>Gomes</u> | | | |
| | | | | INSPECTOR _____ | | | |
| | | | | SOILS ENGR. _____ | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------------------|---|--------|---------|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | | | | | | | | Probed For Utilities From 0'-5' | | | | |
| 12 | | 5'-6'6" | D | 4 | 5 | 5 | Moist Loose | 5' | Black Cinders | 1 | 18' 10" | |
| 17 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 19 | | 10'-11'6" | D | 12 | 10 | 8 | " " | | Fill | 2 | 18' | |
| 27 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 19 | | 15'-16'6" | D | 5 | 3 | 3 | " " | 16'6" | No Rec. | | | |
| 5 | | | | | | | | | | | | |
| 7 | | 16'6"-18' | D | 3 | 2 | 2 | | | Organic Silt | 3 | 18' 10" | |
| 11 | | | | | | | | | | | | |
| 19 | | 18'-20' | | | | | | 20'6" | Tube 2" Shelby- 23" Rec. | | | |
| 18 | | | | | | | | | | | | |
| 26 | | | | | | | | | Tried Piston 21'-23', No Penetration | | | |
| 26 | | 21'-23' | D | 10 | 8 | 8 | | | Fine Med. Gravel, Sand, Trace Silt | 4 | 24' 9" | |
| 24 | | | | 7 | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 41 | | 25'-26'6" | D | 18 | 17 | 8 | | 27' | | 5 | 18' 14" | |
| 38 | | | | | | | | | | | | |
| 19 | | 26'6"-28'6" | D | 11 | 3 | 3 | | | Sandy Silt | 6 | 24' 14" | |
| 18 | | | | 3 | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 40 | | 30'-32' | | | | | | | Shelby Missed | | | |
| 27 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 38 | | 32'-34' | PUSHED | | | | | | No. Rec. | | | |
| 30 | | | | | | | | | | | | |
| | | 35'-36'6" | D | 1 | 1 | 2 | | | Soft Gr. Organic Silt | 7 | 18' 12" | |
| | | | | | | | | | | | | |
| | | 38'-39'3" | | | | | | | Piston 16" Rec. | | | |

| | | | | | | | |
|---------------------------------|------------------|---|--|----------------------|--|----------------------|--|
| GROUND SURFACE TO _____ | | USED _____ | | "CASING: THEN _____ | | SUMMARY: | |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | Cohesionless Density | | Cohesive Consistency | |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 Loose | | 0-4 Soft | | 30 + Hard | |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | | 4-8 M/Stiff | | Earth Boring 17 | |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | | 8-15 Stiff | | Rock Coring | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | | 15-30 V-Stiff | | Samples 22 | |
| TOWN PRESS - EAST PROV. | | | | | | HOLE NO. 62 | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 62

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time | |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ | a.m. |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ | p.m. |
| | | | | | BIT _____ | INSPECTOR _____ | _____ | |
| | | | | | | SOILS ENGR. _____ | _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | | 39'6"-41' | D | 3 | 4 | 4 | Soft Moist | | Gr. Organic Silt, Tr. Peat Fibers | 8 | 13" | 14 |
| | | 43'-45' | UP | | | | | 45' | 3" Piston 22" Rec. | | | |
| | | 45'-46'6" | D | 5 | 9 | 8 | Moist Soft | 48' | Med. Gr. Silt Sand, Trace Med. Sand, Tr. Org. | 9 | 13" | 14" |
| | | 50'-51'6" | D | 8 | 10 | 13 | Med. Dense | | Silty Sand, Yellow Gray Mottled Clay Lenses | 10 | 13" | 17" |
| | | 55'-56'6" | D | 18 | 14 | 12 | | | | 11 | 13" | 14" |
| | | 60'-61'6" | D | 16 | 12 | 14 | | | | 12 | 13" | 10" |
| | | 65'-66'6" | D | 29 | 24 | 28 | | 67'6" | | 13 | 16" | 21" |
| | | 70'-71'6" | D | 13 | 20 | 14 | Moist M.D. | | Compact Gr. Silty, Fine Sand | 14 | 15" | 12" |
| 17 | | 75'-76'6" | D | 16 | 14 | 14 | | 78' | | 15 | 15" | 12" |
| 24 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 62 | | | | | | | Moist Med.D. | | 2" 5" Running Sand @ 80' | | | |
| 74 | | | | | | | | | Med. Comp. Gr. Fine Sand | | | |

red
W
Casing

GROUND SURFACE TO _____

USED _____ CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. 62

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3

DATE _____

HOLE NO. 62

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS _____
 LOCATION _____
 PROJ. NO. _____
 OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | BIT _____ | INSPECTOR _____ | _____ |
| | | | | | | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|-------------------------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | 38 | 89'-82' | D | 6 | 7 | 12 | Moist M.D. | Med. Comp. Gr. Fine Sand | 16 | 24" | 16" | |
| | 32 | | | 14 | | | | | | | | |
| | 40 | | | | | | | | | | | |
| | 42 | | | | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 38 | 85'-87' | D | 6 | 6 | 7 | | | 17 | 24" | 15" | |
| | 42 | | | 6 | | | | | | | | |
| | 48 | | | | | | | | | | | |
| | 53 | | | | | | | | | | | |
| | 68 | | | | | | | | | | | |
| | 60 | 90'-91'6" | D | 6 | 8 | 10 | | | 18 | 18" | 12" | |
| | 68 | | | | | | | | | | | |
| | 140 | | | | | | | | | | | |
| | 160 | | | | | | | | | | | |
| | 181 | | | | | | | | | | | |
| #450 | 32 | 95'-97' | D | 5 | 5 | 8 | | | 19 | 24" | 14" | |
| | 61 | | | 9 | | | | | | | | |
| | 68 | | | | | | | | | | | |
| | 96 | | | | | | | | | | | |
| | 124 | | | | | | | | | | | |
| | 126 | 100'-102' | D | 19 | 12 | 11 | 103' | | 20 | 24" | 10" | |
| | 140 | | | 12 | | | | | | | | |
| | 140 | | | | | | | | | | | |
| | 151 | | | | | | | | | | | |
| | 163 | | | | | | | | | | | |
| | 64 | 105'-107' | D | 20 | 18 | 20 | | Comp. Gr. Sand Trace Silt | 21 | 24" | 18" | |
| | 82 | | | 14 | | | | | | | | |
| | 84 | | | | | | | | | | | |
| | 93 | | | | | | | | | | | |
| | 107 | | | | | | | | | | | |
| | 70 | 110'-112' | D | 12 | 12 | 8 | 117' | No Rec. Bottom of Boring at 117' | 22 | 24" | 16" | |
| | 86 | | | 7 | | | | | | | | |
| | 94 | 115'-117' | D | 20 | 20 | 21 | | | | | | |
| | 112 | | | 24 | | | | | | | | |
| | 99 | | | | | | | | | | | |

GROUND SURFACE TO 45'-Oil 48" USED 115'-21" CASING: THEN _____

| | | | | |
|--|---|--|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>117'</u> Rock Coring <u>0</u> Samples <u>22</u> |
|--|---|--|---|---|

HOLE NO. 62

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 4
 DATE 11/8/71
 HOLE NO. 63
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.1'

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------------|------------------------|---------------|---------|-----------|----------------------------------|-------------------|
| At <u>8'</u> | after <u>16</u> Hours | Type <u>RODS-"AW"</u> | <u>S/S</u> | | | START <u>11/8/71</u> | <u>_____</u> a.m. |
| | <u>20'</u> Casing | Size I.D. <u>H+BWF</u> | <u>1 3/8"</u> | | | COMPLETE <u>11/12/71</u> | <u>_____</u> p.m. |
| At _____ | after _____ Hours | Hammer Wt. <u>300#</u> | <u>140#</u> | | | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | | | BORING FOREMAN <u>R. Andrews</u> | |
| | | | | | | INSPECTOR <u>R. Urcum</u> | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|------|-------|------------------------------|-----------------------------|---|--------|-----|-----|
| | | | | From | To | | | | | No. | Pen | Rec |
| | | | | 0-6 | 6-12 | 12-18 | | | | | | |
| 4 | | | | | | | | Black Ash & Fine Sand, Fill | | | | |
| 6 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 12 | | 5'-6'6" | D | 7 | 8 | 8 | | | | 1 | 18" | 14' |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 12 | | 10'-12'6" | D | 4 | 3 | | | | | 2 | 30' | 6" |
| 14 | | | | 2 | 3 | | | | | | | |
| 14 | | | | 4 | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 16 | | 15'-17' | D | 10 | 8 | | | | | 3 | 24' | 10" |
| 17 | | | | 4 | 4 | | | | | | | |
| 8 | | | | | | | | | 17'6" | | | |
| 6 | | | | | | | | | | | | |
| 15 | | 19'-20'6" | D | 1 | 1 | 1 | H-Flush Casing | | 4 | 18' | 7" | |
| 12 | | | | | | | | | | | | |
| 16 | | 21'-22'8" | UP | | | | | | 1 | 20' | 17" | |
| 16 | | | | | | | | | | | | |
| 15 | | 23'-24'6" | D | 1 | 2 | 2 | | | 5 | 18" | 18" | |
| 21 | | | | | | | | | 5 | 18" | 11" | |
| 20 | | | | | | | | | | | | |
| 19 | | 26'-28' | UP | | | | | | 2 | 24' | 23" | |
| 19 | | | | | | | | | | | | |
| 20 | | 28'-29'6" | D | PUSH | | | | | 6 | 18' | 17" | |
| 23 | | | | | | | | 30' | | | | |
| 12 | | 31'-33' | UP | | | | | | 3 | 24' | 24" | |
| 11 | | | | | | | | | | | | |
| 13 | | 33'-34'6" | D | PUSH | | | BW-Flush Casing | | 7 | 18' | 18" | |
| 14 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | | | | | | | 39'6" | | | | |
| 17 | | | | | | | | | | | | |

GROUND SURFACE TO 30' USED It "CASING: THEN _____

| | | | | |
|--|---|--|---|---|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>122</u> Rock Coring _____ Samples <u>25</u> |
|--|---|--|---|---|

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 4

DATE _____

HOLE NO. 63

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|----------------------------|-------------------|--------|---------|-----------|----------------------|------------|
| At _____ after _____ Hours | Type _____ | _____ | _____ | _____ | START _____ | _____ o.m. |
| At _____ after _____ Hours | Size I.D. _____ | _____ | _____ | _____ | COMPLETE _____ | _____ o.m. |
| | Hammer Wt. _____ | _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ o.m. |
| | Hammer Fall _____ | _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | _____ | _____ | _____ | INSPECTOR _____ | |
| | | _____ | _____ | _____ | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 12 | | 40'-41'6" D | D | 4 | 5 | 5 | | 42' | Gray Fine to Med. Sand | 8 | 18" | 17" |
| 13 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 6 | | | | | | | BW | | | | | |
| 6 | | | | | | | Flush | | | | | |
| 8 | | 45'-46'6" D | D | 1 | 1 | 1 | | | | 9 | 18" | 16" |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 10 | | | | | | | | 50' | | | | |
| 47 | | 50'-51'6" D | D | 1 | 1 | 2 | H | | | 10 | 18" | 15" |
| 31 | | | | | | | Flush | | | | | |
| 35 | | 53'-55' UP | UP | | | | | | | 4 | 24" | 22" |
| 23 | | | | | | | | | | | | |
| 20 | | | | | | | | 55' | | | | |
| W | | 55'-56'6" D | D | 1 | 1 | 1 | | | | 11 | 18" | 14" |
| A B | | | | | | | BW | | | | | |
| S W/ | | | | | | | Flush | | | | | |
| H F | | | | | | | | 59' | | | | |
| I | | | | | | | | | | | | |
| W | | 60'-61'6" D | D | 1 | 1 | 2 | | | Brown Peaty Silt, Trace Fine to Med. Sand | 12 | 18" | 14" |
| a B | | | | | | | BW | | | | | |
| s W/ | | | | | | | FLUSH | | | | | |
| h F | | | | | | | | | | | | |
| I | | | | | | | | | | | | |
| 1 | | 65'-66'6" D | D | 1 | 2 | 3 | | | Gray Brown Peaty Silt, 67' to 70' Wash Was Lite Gray | 13 | 18" | 15" |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 13 | | | | | | | | 70' | | | | |
| 21 | | 70'-71'6" D | D | 10 | 10 | 11 | | | Black Org. Silt | 14 | 18" | 10" |
| 19 | | | | | | | | | | | | |
| 21 | | | | | | | | 73' | | | | |
| 27 | | | | | | | | | Gray Fine to Coarse Sand, Some Fine Gravel, Trace Silt | | | |
| 30 | | | | | | | | | | | | |
| 16 | | 75'-76'6" D | D | 8 | 8 | 7 | | | | 15 | 18" | 12" |
| 17 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| TOWN PRESS - EAST PROV | | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | | HOLE NO <u>63</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 4

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

DATE _____
 HOLE NO. 63
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR | Date | Time | |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ | |
| | | | | | | INSPECTOR _____ | _____ | |
| | | | | | | SOILS ENGR. _____ | _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|--|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 17 | | 80'-81'6" | D | 8 | 8 | 10 | | Gray Fine to Coarse Sand, Trace Silt, Fine Gravel | 16 | 18 | 12" | |
| 19 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 19 | | 85'-86'6" | D | 9 | 12 | 12 | | Sand Ran Back 5' in Pipe | 17 | 18 | 10" | |
| 24 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 34 | | 90'-92' | D | 22 | 16 | | 92' | Gray Fine Sand, Some Silt | 18 | 24 | 8" | |
| 29 | | | | 15 | 16 | | | | | | | |
| 32 | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | |
| 32 | | 95'-97' | D | 12 | 11 | | | Gray Fine Sand, Trace Silt | 19 | 24 | 10" | |
| 39 | | | | 11 | 9 | | | | | | | |
| 43 | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | |
| 27 | | 100'-102' | D | 9 | 10 | | 103' | Gray Fine Sand, Trace Silt | 20 | 24 | 16" | |
| 29 | | | | 11 | 11 | | | | | | | |
| 30 | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 47 | | 105'-107' | D | 12 | 11 | | | Missed Sample at 110' to 112' Went Back Down Hole For Sampled-Sand, Ran Back 11' in Casing | 21 | 24 | 8" | |
| 33 | | | | 14 | 16 | | | | | | | |
| 41 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | |
| 71 | | 110'-112' | D | 7 | 8 | | 112' | Gray Fine to Coarse Sand | | | | |
| 63 | | | | 8 | 8 | | | | | | | |
| 95 | | 112'-114' | D | 12 | 11 | | | | | 22 | 24 | 12" |
| 103 | | | | 12 | 14 | | | | | | | |
| 115 | | | | | | | | | | | | |
| 27 | | 115'-117' | D | 12 | 13 | | | | 23 | 24 | 11" | |
| 31 | | | | 13 | 11 | | | | | | | |
| 50 | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

| | | | | |
|--|---|--|--|--|
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
|--|---|--|--|--|

HOLE NO. 63

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, INC. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas. Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

SHEET 1 OF 2
 DATE 10/5/71
 HOLE NO. 64
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.2'

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|------------------------------|---------------|-----------|-----------------------------|------------|
| At <u>8'-9'</u> | after _____ Hours | Type Rods <u>"AW"</u> | <u>S/S</u> | _____ | START <u>10/5/71</u> | _____ a.m. |
| At _____ | after _____ Hours | Size I.D. <u>4" + 2 1/2"</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>10/8/71</u> | _____ p.m. |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | _____ | BORING FOREMAN <u>Comes</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Per | Rec |
| | | | | | | | | | Probed 0'-5' to Avoid Utilities | | | |
| | | | | | | | | | Loose Black Cinders & Ashes, Fill | 1 | 24' | 10" |
| 20 | | 5'-7' | D | 6 | 3 | 3 | | | | | | |
| 12 | | | | 3 | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 12 | | 10'-11'6" | D | 5 | 14 | 11 | | | | 2 | 18' | 9" |
| 12 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 11 | | | | | | | | 14' | | | | |
| 8 | | | | | | | | | | | | |
| 6 | | 15'-16'6" | D | 4 | 3 | 3 | Moist Soft | | Sandy Org. Silt, Trace Oil | 3 | 18' | 8" |
| 13 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 8 | | 18'-19' | D | 2 | 3 | | | | No Rec. | | | |
| 10 | | 19'-20' | D | 3 | 5 | | | 20' | " " " | | | |
| 35 | | | | | | | | | | | | |
| 58 | | 20'-21'6" | D | 24 | 28 | 26 | Moist M.D. | | Comp. Gr. Gravel, Med.-Fine Sand | 4 | 18' | 12" |
| 31 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| W | | 25'-26'6" | D | 21 | 23 | 32 | | | | 5 | 18' | 7" |
| A | | | | | | | | | | | | |
| S | | | | | | | | | | | | |
| 11 | | | | | | | | 28' | | | | |
| ED | | | | | | | | | Med. Comp. Brown Silty, Med. to Fine Sand, Trace Coarse Gravel | 6 | 18' | 10" |
| 7 | | 30'-31'6" | D | 19 | 12 | 14 | Moist M.D. | | | | | |
| 9 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 2 | | 35'-36'6" | D | 16 | 20 | 24 | | | | 7 | 18' | 11" |
| 6 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |

GROUND SURFACE TO 45' USED 2 1/4" CASING: THEN 2 1/2" TO 45'

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 48'
 Rock Coring 0
 Samples 9

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-442

SHEET 1 OF 2
 DATE _____
 HOLE NO. 65
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.5

| GROUND WATER OBSERVATIONS | | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-----------------|-------|-------------------------------|--------|---------------|-----------|----------------------------------|------------|
| At <u>13'4"</u> | after <u>72</u> | Hours | <u>Rods-"AW"</u> | | | | START <u>11/5/71</u> | <u>o.m</u> |
| <u>40' Casing</u> | | | Type _____ | | <u>S/S</u> | | COMPLETE <u>11/8/71</u> | <u>p.m</u> |
| At <u>10'3"</u> | after <u>2</u> | Hours | Size I.D. <u>HW & BWF</u> | | <u>1 3/8"</u> | | TOTAL HRS. _____ | |
| <u>30' Casing</u> | | | Hammer Wt. <u>300#</u> | | <u>140#</u> | BIT _____ | BORING FOREMAN <u>R. Andrews</u> | |
| | | | Hammer Fall <u>24"</u> | | <u>30"</u> | | INSPECTOR _____ | |
| | | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec |
| | 4 | (BWF Casing to 30' then BWF Casing) | | | | | | | | | | |
| 5 | 10 | 5'-6'6" | D | 1 | 1 | 1 | | | | 1 | 18' | 13" |
| 10 | 11 | 10'-11'6" | D | 9 | 18 | 15 | | | | 2 | 16' | 12" |
| 15 | 10 | 15'-17'6" | D | 8 | 12 | 1 | | 17' | | 3 | 30' | 14" |
| 20 | 30 | 20'-21'6" | D | 10 | 10 | 9 | | 23' | Gray fine to coarse SAND, trace of fine gravel | 4 | 18' | 14" |
| 25 | 22 | 25'-26'6" | D | 8 | 10 | 14 | | | Gray fine to coarse SAND, trace of fine gravel, trace of silt (at 30' reduced hole to BWF) | 5 | 18' | 15" |
| 30 | 4 | 30'-31'6" | D | 8 | 10 | 11 | | 32' | | 6 | 18' | 6" |
| 35 | 16 | 35'-36'6" | D | 4 | 8 | 16 | | 38' | Gray fine to medium SAND, trace of coarse sand (Sand ran back 5'6" in Casing at 35') | 7 | 18' | 8" |
| 40 | 44 | | | | | | | | Gray fine to coarse SAND, some silt | | | |

| | | | | |
|---------------------------------|------------------|---|----------------------|---------------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: _____ | THEN _____ | SUMMARY: _____ |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | Cohesionless Density | Cohesive Consistency |
| D=Dry C=Cored W=Washed | trace 0 to 10% | 0-10 Loose | 0-4 Soft | 30+ Hard |
| UP=Undisturbed Piston | little 10 to 20% | 10-30 Med. Dense | 4-8 M/Stiff | |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | 8-15 Stiff | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | 15-30 V-Stiff | |
| | | | | Earth Boring <u>40'6"</u> |
| | | | | Rock Coring _____ |
| | | | | Samples <u>9</u> |
| | | | | HOLE NO. <u>65</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 65

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-442

| | | | | | | |
|---------------------------|-------------------|-------------------|---------|-----------|----------------------|------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | Date | Time |
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 45 | 16 | 40'-41'6" | D | 13 | 16 | 20 | | | Gray fine to coarse SAND, some silt | 8 | 18" | 14" |
| | 19 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 42 | | | | | | | 44' | | | | |
| | 43 | | | | | | | | Gray fine to coarse SAND, some silt, trace of fine gravel | 9 | 18" | 10" |
| | | 45'-46'6" | D | 12 | 14 | 16 | | 46'6" | | | | |
| 50 | | | | | | | | | Bottom of Boring 46'6" | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | | |
|--|---|---|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: _____ | THEN _____ |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ | | | HOLE NO. <u>65</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET

EAST PROVIDENCE, R. I.

SHEET 1 OF 1

DATE 11/15/71

HOLE NO. 66

LINE & STA. _____

OFFSET _____

SURF. ELEV. 9.5'

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Providence Gas Co.

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. _____

SAMPLES SENT TO Taken at Site

OUR JOB NO. 71-422

| | | | | |
|--|---|--|-----------------------------|--|
| <p>GROUND WATER OBSERVATIONS</p> <p>At <u>9'</u> after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p>CASING</p> <p>Type RODs - <u>"AW"</u></p> <p>Size I.D. <u>BW</u></p> <p>Hammer Wt. <u>300#</u></p> <p>Hammer Fall <u>24"</u></p> | <p>SAMPLER</p> <p><u>S/S</u></p> <p><u>1 3/8"</u></p> <p><u>140#</u></p> <p><u>30"</u></p> | <p>CORE BAR.</p> <p>BIT</p> | <p>Date <u>11/15/71</u> Time _____</p> <p>START _____ a.m. p.m.</p> <p>COMPLETE _____ a.m. p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN <u>Corbett</u></p> <p>INSPECTOR <u>R. Jannina</u></p> <p>SOILS ENGR. _____</p> |
|--|---|--|-----------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | | Probe First 5' | | | | | | | | | | |
| 4 | | 5'-6'6" | D | 11 | 11 | 8 | Dry M.D. | | Brown Black Fine To Med. Sand Bricks, Cinders, Fill | 1 | 18' | 14' |
| 11 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 3 | | 10'-11'6" | D | 11 | 11 | 6 | | 11'6" | Lost Sample | | | |
| 4 | | | | | | | | | | | | |
| 6 | | 11'6"-13' | D | 3 | 5 | 4 | WET Loose | 15'6" | Black Med. to Fine Sand, Gravel, Bricks, Fill | 2 | 18' | 14' |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 3 | | 15'-16'6" | D | 1 | 2 | 1 | Wet Loose | 20' | Gray Med. to Coarse Sand, Trace Fine Gravel | 3 | 18' | 12' |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 3 | | 20'-21'6" | D | 5 | 4 | 5 | Wet M.D. | | Lost Sample 1' of Running Sand at 20' | - | 18' | 10' |
| 7 | | | | | | | | | | | | |
| 8 | | 21'6"-23' | D | 5 | 5 | 6 | | | Gray Coarse to Med. Sand, Trace Fine Gravel | 4 | 18' | 14' |
| 7 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 7 | | 25'-26'6" | D | 6 | 6 | 6 | | | | 5 | 18' | 14' |
| 9 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 13 | | | | | | | | 30' | | | | |
| 11 | | 30'-31'6" | D | 11 | 15 | 17 | Wet Dense | | Gray Brown Coarse to Fine Sand, Fine to Med. Gravel Little Silt | 6 | 18' | 14' |
| 26 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| | | 35'-36'6" | D | 18 | 23 | 27 | Wet V.D. | 36'6" | Bottom of Boring at 36'6" | 7 | 18' | 12' |
| | | | | | | | | | | | | |

| GROUND SURFACE TO <u>35'</u> | USED <u>BW</u> CASING: THEN <u>S/S</u> to 36'6" | | | | | | | | | | | |
|---|--|---|----------------------|----------------------|------------|-------------------|------------------|-------------|-------------|------------|----------------|---------------|
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Cohesionless Density</th> <th>Cohesive Consistency</th> </tr> <tr> <td>0-10 Loose</td> <td>0-4 Soft 30+ Hard</td> </tr> <tr> <td>10-30 Med. Dense</td> <td>4-8 M/Stiff</td> </tr> <tr> <td>30-50 Dense</td> <td>8-15 Stiff</td> </tr> <tr> <td>50+ Very Dense</td> <td>15-30 V-Stiff</td> </tr> </table> | Cohesionless Density | Cohesive Consistency | 0-10 Loose | 0-4 Soft 30+ Hard | 10-30 Med. Dense | 4-8 M/Stiff | 30-50 Dense | 8-15 Stiff | 50+ Very Dense | 15-30 V-Stiff |
| Cohesionless Density | Cohesive Consistency | | | | | | | | | | | |
| 0-10 Loose | 0-4 Soft 30+ Hard | | | | | | | | | | | |
| 10-30 Med. Dense | 4-8 M/Stiff | | | | | | | | | | | |
| 30-50 Dense | 8-15 Stiff | | | | | | | | | | | |
| 50+ Very Dense | 15-30 V-Stiff | | | | | | | | | | | |
| | | <p>SUMMARY:</p> <p>Earth Boring <u>36'6"</u></p> <p>Rock Coring _____</p> <p>Samples <u>7</u></p> | | | | | | | | | | |
| | | <p>HOLE NO. <u>66</u></p> | | | | | | | | | | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE 12/31/71

HOLE NO. 70

LINE & STA. _____

OFFSET _____

SURF. ELEV. 7.6

TO Haley & Aldrich, Inc.

ADDRESS Cambridge, Mass.

PROJECT NAME Providence, Gas Co.

LOCATION Providence, R.I.

REPORT SENT TO above

PROJ. NO. _____

SAMPLES SENT TO _____

OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | RODS - "AW" | CASING | SAMPLER | CORE BAR. | START | DATE | TIME |
|---------------------------|----------------------|------------------------------|----------|--------------|-----------|----------------------------|-----------------------------------|-------|
| At <u>9'0"</u> | after <u>0</u> Hours | Type _____ | HW _____ | S/S _____ | _____ | 12/31/71 | _____ | _____ |
| 9:40 AM - 1/3/72 with | | Size I.D. <u>4" / 2 1/2"</u> | BW _____ | 1 3/8" _____ | _____ | COMPLETE | 1/3/72 | _____ |
| 20' HW Casing | | Hammer Wt. <u>300#</u> | _____ | 140# _____ | BIT _____ | TOTAL HRS. _____ | BORING FOREMAN <u>Quagliaroli</u> | |
| At <u>5'</u> | after <u>0</u> Hours | Hammer Fall <u>24"</u> | _____ | 30" _____ | _____ | INSPECTOR <u>R. Varnum</u> | SOILS ENGR. _____ | |
| No Casing | | | | | | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---|---|----------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 10 | | | | | | | | Gray Brown Fine to Coarse SAND, Trace Fine Gravel, Trace Silt, Cinders, Fill Note: 10'-11'6" 3" Rec. On Second Attempt | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | 5'-6'6" | D | 4 | 5 | 5 | Moist Loose | | | 1 | 18" | 14" |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | 10'-11'6" | D | 4 | 2 | 2 | Wet Loose | 15'6" | 2 | 18" | 3" | |
| 11 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | 15'-16'6" | D | 4 | 1 | 1 | Wet Loose | | 3 | 18" | 12" | |
| 10 | | 16'6"-18' | D | 1 | 1 | 3 | Loose | 20' | 4 | 18" | 14" | |
| 15 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 9 | | 20'-21'6" | D | 8 | 2 | 1 | Wet Loose | | 0 | 18" | 0 | |
| 16 | | 21'6"-23' | D | 7 | 5 | 2 | | | 0 | 18" | 0 | |
| 17 | | 23'-25' | W | | | | | | 5 | Wash Sam | | |
| 19 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 8 | | 25'-26'6" | D | 12 | 13 | 12 | Wet M.D. | 30' | 6 | 18" | 4" | |
| 9 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | 30'-31'6" | D | 16 | 17 | 19 | Wet Dense | | 7 | 18" | 14" | |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 15 | | 35'-36'6" | D | 12 | 16 | 17 | Wet Dense | | 8 | 18" | 12" | |
| 26 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 42 | | 40'-41'6" | D | 42 | 24 | 27 | Wet V.D. | | 9 | 18" | 14" | |

GROUND SURFACE TO _____

USED _____ CASING: THEN _____

Sample Type

D=Dry C=Cored W=Washed
UP=Undisturbed Piston
TP=Test Pit A=Auger V=Vane Test
UT=Undisturbed Thinwall

Proportions Used

trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

140lb W/L x 30" fall on 2" O.D. Sampler

Cohesionless Density Cohesive Consistency
0-10 Loose 0-4 Soft 30+ Hard
10-30 Med. Dense 4-8 M/Stiff
30-50 Dense 8-15 Stiff
50+ Very Dense 15-30 V-Stiff

SUMMARY:

Earth Boring 51'6"
Rock Coring _____
Samples 11

HOLE NO. _____

70

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE 1/3/72
 HOLE NO. 70A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 6.7

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| | | | | |
|--|--|---|------------------------------|--|
| GROUND WATER OBSERVATIONS At <u>9'</u> after <u>0</u> Hours <u>1:00 1/3/72</u> At <u>20' Casing</u> after _____ Hours | Rods-"AW" Type <u>BW</u> Size I.D. <u>2 1/2"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING <u>BW</u> SAMPLER <u>S/S</u> Size I.D. <u>1 3/8"</u> Hammer Wt. <u>140#</u> Hammer Fall <u>30"</u> | CORE BAR. _____ BIT _____ | Date _____ Time _____ START <u>1/3/72</u> _____ a.m. COMPLETE <u>1/3/72</u> _____ p.m. TOTAL HRS. _____ BORING FOREMAN <u>Quagliaroli</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____ |
|--|--|---|------------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 4 | | | | | | | | | Black Oily SAND, Silt, Gravel Cinders, Fill | | | |
| 6 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 4 | | 10'-11'6" | D | 4 | 1 | 2 | Wet Loose | 13' | | 1 | 18" | 16' |
| 5 | | | | | | | | | | | | |
| 4 | | 12'-13' | D | 2 | 1 | | | | | 2 | 12" | 10' |
| 3 | | 13'-14' | D | 1 | 2 | | Wet Loose | 15' | Black PEAT & Oily Fine Sand | 2A | 12" | 9" |
| 3 | | | | | | | | | | | | |
| 4 | | 15'-16'6" | D | 1 | 1 | 1 | Wet Soft | 17' | Black Gray Org. SILT | 3 | 18" | 17' |
| 5 | | | | | | | | | | | | |
| 5 | | 17'-19' | Push 2" | Shelby | | | | | Gray Fine to Coarse SAND, Some Org. Silt & Fine to Med. Gravel | 4 | 24" | 9" |
| 7 | | | | | | | | | | | | |
| 13 | | | | | | | | 20' | | | | |
| 8 | | 20'-21'6" | D | 9 | 5 | 8 | Wet M.D. | | Black Gray Fine to Coarse Oily SAND, Some Fine to Coarse Gravel, & org. Silt | 5 | 18" | 14' |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 13 | | | | | | | | 25' | | | | |
| 9 | | 25'-26'6" | D | 7 | 5 | 5 | Wet Loose | | Black Gray Oily Fine to Coarse SAND, Some Fine to Coarse Gravel, Org. Silt Possible Fill | 6 | 18" | 6' |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 22 | | | | | | | M.D. | | | | | |
| | | 30'-31'6" | D | 13 | 13 | 12 | Wet | 31'6" | | 7 | 18" | 16' |
| | | | | | | | | | Bottom of Boring at 31'6" | | | |
| | | | | | | | | | NOTE: 17'-19' Push Shelby Sand & Gravel in Tube Put in Jar(S-4) | | | |

| | | | | |
|---|---|--|---|---|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ "CASING: THEN _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>31'6"</u> Rock Coring _____ Samples <u>7</u> HOLE NO. <u>70A</u> |
|---|---|--|---|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 12/29/71
 HOLE NO. 71
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 6.6

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | Rods - "AW" CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|------------------------|---------------|-----------|-----------------------------|------|
| At <u>18'7"</u> | after <u>1/2</u> Hours | Type _____ | <u>S/S</u> | _____ | START <u>12/29/71</u> | a.m. |
| At _____ | after _____ Hours | Size I.D. <u>BW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>12/30/71</u> | p.m. |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | _____ | BORING FOREMAN <u>Gomes</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|--------|------|--|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. | |
| 1 | | | | | | | | | Probed to 5' No Samples Required | | | | |
| 2 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 9 | | | | | | | | 5' | | | | | |
| 4 | | 5'-6'6" | D | 2 | 3 | 1 | Soft | | Dark Brown Fine to Coarse SAND, Trace Fine Gravel, Cinders, Fill | 1 | 18'7" | | |
| 4 | | | | | | | | | | | | | |
| 12 | | | | | | | | 8' | | | | | |
| 19 | | | | | | | | | | | | | |
| 11 | | | | | | | | | Gray Fine Silty SAND, Little Fine Gravel, (Fuel Odor Noted) Fill | | | | |
| 5 | | 10'-11'6" | D | 12 | 23 | 11 | Moist M.D. | | | 2 | 18'10" | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | 14' | | | | | |
| 8 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 2 | | 15'-16'6" | D | 4 | 3 | 3 | Moist Soft | | Gray Fine Silty SAND, Trace Fine Gravel, Fill | 3 | 18'11" | | |
| 7 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 6 | | | | | | | | 20' | | | | | |
| 1 | | 20'6"-22'6" | | | | | | | Org. S-1 20'6"-22'6" Pressed 24"-Rec 100% | | | | |
| 1 | | | | | | | | 22' | | | | | |
| 3 | | 22'6"-24'6" | | | | | | | 22'6"-24'6" Missed | | | | |
| 2 | | | | | | | | | | | | | |
| 1 | | 24'6"-27' | | | | | | 24'6" | | | | | |
| 1 | | | | | | | | | S-2 24'6"-27' 100% Rec. | | | | |
| 1 | | | | | | | | 27' | | | | | |
| 2 | | | | | | | | | | | | | |
| 2 | | | | | | | | | Org. Silt (Gray) | | | | |
| 1 | | | | | | | | | | | | | |
| 7 | | 30'-31'6" | D | 1 | 1 | 2 | Moist Soft | | | 4 | 18' - | | |
| 9 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 17 | | | | | | | | 35' | | | | | |
| 14 | | 35'-37' | | | | | | | S-3 35'-37' 100% Rec. | | | | |
| 15 | | | | | | | | 37' | | | | | |
| 15 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 66'6"
 Rock Coring _____
 Samples 11

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

SHEET 1 OF 3
 DATE 12/31/71
 HOLE NO. 72
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.5

| GROUND WATER OBSERVATIONS | CASING | SAMPLER | CORE BAR. | Date | Time |
|-----------------------------------|------------------------|---------------|-----------|-----------------------------|------------|
| At <u>12'9"</u> after _____ Hours | Rods-"AW" | <u>S/S</u> | _____ | START <u>12/31/71</u> | _____ a.m. |
| At _____ after _____ Hours | Type _____ | <u>1 3/8"</u> | _____ | COMPLETE <u>1/4/72</u> | _____ p.m. |
| | Size I.D. <u>4"</u> | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | Hammer Wt. <u>300#</u> | <u>24"</u> | _____ | BORING FOREMAN <u>Gomes</u> | |
| | Hammer Fall _____ | <u>30"</u> | _____ | INSPECTOR <u>R. Varnum</u> | |
| | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|------------------------------------|---|--------|-----|------|-----|-----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. | | |
| 13 | | | | | | | | No Sample to 5' | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 66 | | 5'-6'6" | D | 2 | 2 | 1 | Moist Loose | 18'6" | Dark Gray Fine to Coarse SAND & Gravel, Ashes, Cinders (Oil Soaked), Fill | 1 | 18' | 12' | | |
| 53 | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 29 | | 10'-11'6" | D | 4 | 4 | 7 | " " | | | | | 2 | 18' | 9" |
| 31 | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | |
| 10 | | 15'-16'6" | D | 3 | 3 | 2 | " " | | | 3 | 18' | 10" | | |
| 28 | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 9 | | 20'-21'6" | D | 14 | 5 | 4 | Moist Loose | 2" S-1 3" U.P. -1 3" U.P. -2 | Gray Org. SILT (No Rec. W/S/S) 22' - 24'6" - 30" Press Rec. 26" 25' - 27' - 24" Press Rec. 21 1/2" Gray Org. SILT 31' - 33' - 24" Press Rec. 24" | | | | | |
| 8 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 14 | | 27'-28'6" | D | 1 | 1 | 2 | Moist Soft | | | | | 4 | 18' | 18" |
| 16 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 29 | | 33'-34'6" | D Press | | | | | | | 5 | 18' | 18" | | |
| 21 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 29 | | 38'-40' | | | | | | 2" S-2 | 38' - 40' - 24" Press 100% Rec. | | | | | |
| 21 | | | | | | | | | | | | | | |

| | | | | | | | |
|---------------------------------|------------------|---|--|----------------------|--|-------------------------|--|
| GROUND SURFACE TO _____ | | USED _____ | | "CASING: THEN _____ | | SUMMARY: | |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | Cohesionless Density | | Cohesive Consistency | |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | | 0-10 Loose | | 0-4 Soft 30+ Hard | |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | | 10-30 Med. Dense | | 4-8 M/Stiff | |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 30-50 Dense | | 8-15 Stiff | | 15-30 V-Stiff | |
| UT=Undisturbed Thinwall | and 35 to 50% | 50+ Very Dense | | | | | |
| | | | | | | Earth Boring <u>90'</u> | |
| | | | | | | Rock Coring _____ | |
| | | | | | | Samples <u>15</u> | |
| | | | | | | HOLE NO. _____ | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3

DATE _____

HOLE NO. 72

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------------|-------------------|---------|-----------|----------------------|------------|
| At _____ | after _____ Hours | Type _____ | _____ | _____ | START _____ | _____ o.m. |
| At _____ | after _____ Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ p.m. |
| | | Hammer Wt. _____ | _____ | _____ | TOTAL HRS. _____ | |
| | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | _____ | _____ | INSPECTOR _____ | |
| | | | _____ | _____ | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|--------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 2 1/2" | 23 | 40'-41'5" | D | Press | | | Moist Soft | | Gray Org. SILT & Shells | 6 | 18" | 18" |
| | 27 | | | | | | | | | | | |
| | 30 | | | | | | | | | | | |
| | 78 | | | | | | | | | | | |
| | 108 | 45'-47' | UP #3 | | | | | 3" 47' | Pressed 24" From 45' -47' 100% Rec. | | | |
| 4" | 124 | | | | | | | | | | | |
| | 134 | 47'-48'6" | D | 2 | 5 | 5 | Moist Stiff | | Dark Gray Peaty Org. SILT, Trace Fine SAND | 7 | 18" | 12" |
| | 136 | | | | | | | | | | | |
| | 131 | | | | | | | | | | | |
| 2 1/2" | Red Wash | 50'-51'6" | D | 5 | 8 | 8 | Moist V. Stiff | S-3 53' | Press From 52'-53' No Rec. | 8 | 18" | 13" |
| | 18 | 52'-53' | | | | | | | | | | |
| | 22 | 53'-54'6" | D | 18 | 24 | 29 | Moist M.D. | | Gray Fine to Coarse SAND, & Fine to Coarse Gravel, Some Silt | 9 | 18" | 9" |
| | 39 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 11 | | | | | | | | | | | |
| | 13 | | | | | | | 59' | | | | |
| | 13 | | | | | | | | | | | |
| | 12 | | | | | | | | | | | |
| | 13 | 60'-61'6" | D | 9 | 11 | 13 | Moist M.D. | | Gray Fine to Coarse SAND, Little Fine Gravel, Trace Silt | 10 | 18" | - |
| 2 1/2" | 16 | | | | | | | | | | | |
| | 19 | | | | | | | | | | | |
| | 23 | | | | | | | 64' | | | | |
| | 6 | 64'-65' | D | 2 | 1 | | Moist Loose | 65' | Gray F-C SAND, & Org. Silt, Trace Fine Gravel | 11 | 12" | 7" |
| | 7 | | | | | | | | | | | |
| | 6 | 65'-66' | D | 1 | 1 | | Moist Soft | 68' | Dark Gray Org. SILT, Trace Peat | 11A | 12" | 9" |
| | 5 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 17 | 69'-71' | D | 18 | 18 | 19 | Moist Dense | | Gray Fine to Med. SAND, & Silt, Trace Fine to Coarse Gravel | 12 | 24" | 10" |
| 2 1/2" | 35 | | | | | | | | | | | |
| | 36 | | | | | | | | | | | |
| | 38 | | | | | | | 74' | | | | |
| | 45 | | | | | | | | | | | |
| | 34 | 74'-75'6" | D | 9 | 6 | 4 | Moist Loose | | Gray Fine to Coarse SAND, & Silt, Some Fine to Med. Gravel | 13 | 18" | 9" |
| | 33 | | | | | | | | | | | |
| | 39 | | | | | | | | | | | |
| 39 | | | | | | | | | | | | |
| 45 | 79'-81' | D | 24 | 24 | 21/26 | | | No Rec. | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:

Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2

DATE _____

HOLE NO. 73

LINE & STA. _____

OFFSET _____

SURF. ELEV. 7.8

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | | | RODS-"AW" | CASING | SAMPLER | CORE BAR | Date | | Time | |
|---------------------------|-----------------|-------|-----------------|-------------|--------------------|---------------|----------|--------------------------------|--|----------|--|
| At | | after | Hours | | | | | START | | COMPLETE | |
| At | <u>9'</u> | after | <u>10:40 AM</u> | Type | <u>HW & BW</u> | <u>S/S</u> | | <u>12/28/71</u> | | | |
| | <u>12/29/71</u> | | | Size I.D. | <u>300#</u> | <u>1 3/8"</u> | | <u>12/29/71</u> | | | |
| At | | after | | Hammer Wt. | <u>24"</u> | <u>140#</u> | | | | | |
| | | | | Hammer Fall | | <u>30"</u> | BIT | | | | |
| | | | | | | | | BORING FOREMAN <u>J. Klang</u> | | | |
| | | | | | | | | INSPECTOR <u>R. Varnum</u> | | | |
| | | | | | | | | SOILS ENGR. _____ | | | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|-----|-----|-----|----|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. | | | | |
| 5 | 20 | | | | | | Moist loose | 9' | Black ASHES, little fine to medium Sand & Gravel, Fill | | | | | | | |
| | 27 | | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | | |
| 10 | 10 | 5'-6'6" | D | 3 | 3 | 4 | Moist medium dense | 15' | Brown fine to medium SAND, little silt, trace of fine gravel, Fill (fuel odor noted) | 1 | 18' | 16" | | | | |
| | 18 | | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | |
| 15 | 9 | 10'-11'6" | D | 4 | 6 | 6 | Hammer | 25' | Gray Organic SILT, Shells | | | | | | | |
| | 18 | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | | |
| 20 | 7 | 15'-16'6" | D | 4 | 3 | 2 | Hammer | 25' | Gray fine SAND, some organic silt | | 18' | 0" | | | | |
| | 9 | | | | | | | | | | | | | | | |
| | 4 | 16'6"-18' | D | Pushed-Wc. of Hammer | | | | | | | | 3 | 18' | 16" | | |
| | 4 | | | | | | | | | | | | | | | |
| | 5 | 18'-20' | Shelby | 2" | | | | | | | | | UT | 24' | 19" | |
| 25 | 5 | 20'-22' | UP | Pressed | | | | | | UP | 24' | 20" | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| 30 | 16 | | | | | | Wet loose | 27' | Gray fine to coarse SAND, some shells | 4 | 6" | 6" | | | | |
| | 18 | 26'6"-27' | D | 9 | | | | | | | | | | | | |
| | 19 | 27'-28' | D | 2 | 2 | | | | | | | | 4A | 12' | 10" | |
| | 26 | | | | | | | | | | | | | | | |
| | 42 | 28'6"-30' | D | 11 | 11 | 11 | | | | | | | | 5 | 18' | 6" |
| 35 | 7 | 30'-31'6" | D | 16 | 8 | 9 | Wet medium dense | 31'6" | Gray fine to coarse GRAVEL, little fine to coarse sand | 6 | 18' | 3" | | | | |
| | 17 | | | | | | | | | | | | | | | |
| | 17 | 31'6"-33' | D | 10 | 10 | 11 | | | | | | | | 7 | 18' | 6" |
| | 22 | | | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | | |
| 40 | 4 | 35'-36'6" | D | 10 | 8 | 9 | Wet medium dense | 31'6" | Gray fine to coarse SAND, some fine gravel, little silt | 8 | 18' | 16" | | | | |
| | 10 | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | |

(Note: At 30' reduce to BW)

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30 + Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 Very Stiff

SUMMARY:
 Earth Boring 46'6"
 Rock Coring _____
 Samples 10

HOLE NO 73

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE _____
 HOLE NO. 73-A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 7.0

TO Haley & Aldrich, Inc. ADDRESS CAMBRIDGE, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| | | | | |
|---|---|---|------------------------------------|--|
| GROUND WATER OBSERVATIONS At <u>18'</u> after <u>0</u> Hours <u>12/31/71 - 9:00</u> At _____ after _____ Hours | Rods-"AW" CASING Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ _____ BIT | Date _____ Time _____ START <u>12/29/71</u> COMPLETE <u>12/29/71</u> TOTAL HRS. _____ BORING FOREMAN <u>Quagliaroli</u> INSPECTOR <u>K. Varnum</u> SOILS ENGR. _____ |
|---|---|---|------------------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|-----------------|-------------------------|------|----------|------------------------------|--|---|---------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Re |
| 6 | | | | | | | | Brown Fine to Coarse SAND & GRAVEL(Fill) | | | | |
| 8 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 6 | | 15'-15'6" | D | 5 | | | Loose | 15'6" | | 1 | 6" | 5" |
| 4 | | 15'6"-16'6" | D | | 2 | 2 | Wet | | Gray Org. SILT, Trace Shells Trace Fine SAND | 1A | 12" | 1' |
| 2 | | 17'-19' | Press 2" Shelby | | | | | | | UT-124' | 22" | |
| 2 | | | | | | | | | | | | |
| 3 | | 19'-21' | Press 2" Shelby | | | | | | | UT-124' | 20" | |
| 3 | | 21'-22'6" | D | 4 | 2 | 2 | Wet Soft | | | 2 | 18" | 16" |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 6 | | | | | | | | 30' | | | | |
| 7 | | 30'6"-22'6" | Press 2" Shelby | | | | | | Gray Fine to Coarse SAND, Trace Silt, Little Fine Gravel, Little Silt | - | 24" | 0" |
| 12 | | 32'6"-34'6" | Press 2" Shelby | | | | | | | - | 24" | 0" |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 13 | | 34'6"-36' | D | 6 | 9 | 8 | Wet M.D. | | | 3 | 18" | 15" |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 21 | | | | | | | Wet | 39' | Gray Org. Silt, Trace Wood | | | |
| 23 | | 40'-41'6" | D | 2 | 3 | 4 | Loose | | Mixed With The Sand | 4 | 18" | 14" |

| | | | |
|---|---|---|--|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30 + Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50 + Very Dense 15-30 V-Stiff | SUMMARY: Earth Boring <u>71'</u> Rock Coring _____ Samples <u>8</u> HOLE NO. _____ |
|---|---|---|--|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 73A
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. 71-508
 SAMPLES SENT TO _____ OUR JOB NO. _____

| | | | | |
|---|--|---------------------------------|--------------------------------------|--|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | CASING _____ Type _____ Size I.D. _____ Hammer Wt. _____ Hammer Fall _____ | SAMPLER _____ _____ _____ | CORE BAR _____ _____ BIT _____ | Date <u>12/29/71</u> Time _____ START _____ a.m. COMPLETE _____ p.m. TOTAL HRS. _____ BORING FOREMAN _____ INSPECTOR _____ SOILS ENGR. _____ |
|---|--|---------------------------------|--------------------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---|---|---------|---------|-----|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec |
| 16 | | | | | | | | Gray Org. SILT, Fibrous, TR. Wood, Mixed with F-C SAND | | | | |
| 20 | | 42'-43'9" | Press 2" | | | | 42' | | UT-121' 8" | | | |
| 26 | | | | | | | | Gray Fine to Coarse SAND, Little Fine to Med. Gravel, Trace Silt | | | | |
| 30 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 36 | | | | | | | 48' | | | | | |
| 40 | | | | | | | | Gray Brown Fine to Coarse SAND, Some Silt, Little Fine To Coarse Gravel, Note: Tube Taken at 42'-43'9"; Sand & Gravel, Put Rec. in Jar | | | | |
| 41 | | | | | | | | | | | | |
| 16 | | 50'-51'6" | D | 7 | 8 | 10 | Wet M.D. | | | 5 | 18' 17" | |
| 26 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 22 | | 60'-61'6" | D | 17 | 9 | 10 | Wet M.D. | Gray Brown Fine to Coarse SAND, Some Fine to Coarse Gravel, Little Silt Note: 65'-66'6" Recovery on Second Attempt | 6 | 18' 13" | | |
| 26 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 22 | | 65'-66'6" | D | 12 | 10 | 7 | " " | | 7 | 18' 3" | | |
| 46 | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | |
| 79 | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | |
| | | 70'-71'6" | D | 16 | 12 | 10 | " " | 71'6" | 8 | 18' 14" | | |
| | | | | | | | | Bottom of Boring at 71'6" | | | | |

| | | | |
|--|---|--|---|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 12/28/71
 HOLE NO. 74
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. 9.0

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | Rods-"AW" CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|------------------------|------------------------|---------------|-----------|-----------------------------|--------------|
| At <u>20'8"</u> | after <u>1/2</u> Hours | Type _____ | <u>S/S</u> | _____ | START <u>12/28/71</u> | a.m. p.m. |
| At _____ | after _____ Hours | Size I.D. <u>BW</u> | <u>1 3/8"</u> | _____ | COMPLETE <u>12/29/71</u> | a.m. p.m. |
| | | Hammer Wt. <u>300#</u> | <u>140#</u> | BIT _____ | TOTAL HRS. _____ | |
| | | Hammer Fall <u>24"</u> | <u>30"</u> | _____ | BORING FOREMAN <u>Gomes</u> | |
| | | | | | INSPECTOR _____ | |
| | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 2 | | | | | | | | | No Sample to 5' | | | |
| 6 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 6 | | | | | | | | 5' | | | | |
| 8 | | | | | | | | | | | | |
| 4 | | 5'-6'6" | D | 2 | 2 | 3 | Wet Loose | | Dark Gray Fine to Coarse SAND, Gravel, Ash & Cinders (Oil Soaked), Fill | 1 | 18' | 7' |
| 5 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 3 | | 10'-11'6" | D | 3 | 3 | 5 | | | | 2 | 18' | 9" |
| 7 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | 15' | | | | |
| 2 | | 15'-16'6" | D | 1 | 1 | 1 | Moist Soft | | Gray Org. SILT, 2" S-Tube 17'-19' No Rec. 2" S-Tube 19'-21' | 3 | 18' | 12' |
| 2 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 2 | | | | | | | | 21' | | | | |
| 2 | | 21'-22'6" | D | 4 | 5 | 6 | Moist M.D. | 23' | Gray Fine to Med. SAND, Some Silt, Trace Fine Gravel | 4 | 18' | 12' |
| 5 | | | | | | | | | | | | |
| 5 | | 23'-24'6" | D | 6 | 20 | 24 | Moist M.D. | | | 5 | 18' | 9" |
| 17 | | | | | | | " " | | | | | |
| 8 | | 25'-26'6" | D | 12 | 9 | 14 | | | Gray Fine to Coarse SAND, Some Fine Gravel, Little Silt | 6 | 18' | 11' |
| 27 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 19 | | 30'-31'6" | D | 36 | 24 | 32 | | 32'6" | | 7 | 18' | 1' |
| 26 | | | | | | | | | | | | |
| 21 | | | | | | | Moist Loose | | Gray Brown Fine to Med. SAND, Little Fine Gravel, Silt | | | |
| 8 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 6 | | 35'-36'6" | D | 5 | 8 | 9 | | | Missed Sample | | | |
| 12 | | | | | | | | | | | | |
| 20 | | 36'6"-38' | D | 7 | 9 | 8 | | | | 8 | 18' | 11' |
| 25 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density Cohesive Consistency
 0-10 Loose 0-4 Soft 30+ Hard
 10-30 Med. Dense 4-8 M/Stiff
 30-50 Dense 8-15 Stiff
 50+ Very Dense 15-30 V-Stiff

SUMMARY:
 Earth Boring 46
 Rock Coring _____
 Samples 10

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, INC. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-508

SHEET 1 OF 2
 DATE 1/13/72
 HOLE NO. 76
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -3.6' (MHW)

| | | | | |
|---|---|---|---------------------------|--|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods - "AW" CASING Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ BIT | Date _____ Time _____ START <u>1/12/72</u> _____ a.m. COMPLETE <u>1/13/72</u> _____ p.m. TOTAL HRS. _____ BORING FOREMAN <u>AL Whitaker</u> INSPECTOR <u>R. Varnum</u> SOILS ENGR. _____ |
|---|---|---|---------------------------|--|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | PUSH | | | | | | | | | | | |
| | to | | | | | | | 2' | Black Org. SILT, with Layers of Coarse to Fine Sand | | | |
| | 10' | 0'-5' | D | PUSH | | | | | Black Org. SILT | 1 | 60" | 24" |
| | | 7'-9' | ST | PUSH | | | | | | ST1 | 24" | 16" |
| | | | | | | | | 10' | | | | |
| | 2' | 9'-11' | D | PUSH | PUSH | 15 | | | Black Fine to Coarse SAND, Trace Gravel, Little Silt | 2 | 24" | 24" |
| | 9 | | | | | 17 | | | | 2A | | |
| | 14 | | | | | | | | | | | |
| | 18 | | | | | | | | | | | |
| | 23 | 15'-17' | D | | 8 | 10 | 15 | 15' | | 3 | 24" | 16" |
| | 7 | | | | | 17 | | | Gray Brown SILT, Little Fine SAND | | | |
| | 13 | | | | | | | | | | | |
| | 18 | | | | | | | 18' | | | | |
| | 28 | | | | | | | | | | | |
| | 31 | 20'-22' | D | | 15 | 13 | 17 | | Gray Brown Fine to Coarse SAND, Trace Gravel, & Silt | 4 | 24" | 20" |
| | 18 | | | | | 17 | | | | | | |
| | 30 | | | | | | | | | | | |
| | 27 | | | | | | | | | | | |
| | 29 | | | | | | | | | | | |
| | 25 | 25'-27' | D | | 15 | 15 | 17 | 25' | | 5 | 24" | 20" |
| | 31 | | | | | 20 | | | Gray Brown SILT, Trace Fine Sand | | | |
| | 40 | | | | | | | | | | | |
| | 33 | | | | | | | 28' | | | | |
| | 33 | | | | | | | | | | | |
| | 37 | 30'-32' | D | | 18 | 18 | 25 | | Brown Fine to Coarse Gravel & Sand, Trace Silt | 6 | 24" | 8" |
| | 24 | | | | | 34 | | | | | | |
| | 29 | | | | | | | | | | | |
| | 57 | | | | | | | | | | | |
| | 49 | | | | | | | | | | | |
| | 52 | 35'-37' | D | | 17 | 17 | 21 | 35' | | 7 | 24" | 15" |
| | 17 | | | | | 20 | | | Brown SILT with Sand Layers | | | |
| | 18 | | | | | | | 37' | | | | |
| | 26 | | | | | | | | Gray Fine SAND | | | |
| | 35 | | | | | | | | | | | |
| | 43 | | | | | | | | | | | |

GROUND SURFACE TO _____

USED _____ "CASING: THEN _____

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring 52'
 Rock Coring _____
 Samples 10

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 76

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____

PROJECT NAME _____ LOCATION _____

REPORT SENT TO _____ PROJ. NO. _____

SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | a.m. |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| 26 | | 40'-42' | D | 2 | 7 | 10 | | 41.5' | Gray Fine SAND | 8 | 24" | 20" |
| 25 | | | | 14 | | | | | Brown Fine SAND, Trace Silt | | | |
| 33 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 58 | | 45'-47' | D | 11 | 11 | 12 | | 45' | | 9 | 24" | 18" |
| 21 | | | | 12 | | | | | Gray Silty Fine SAND | | | |
| 30 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 49 | | 50'-52' | D | 17 | 17 | 21 | | 50' | | 10 | 24" | 20" |
| | | | | 20 | | | | | Gray Silt, Trace Layers of Clay | | | |
| | | | | | | | | 52' | Bottom of Boring at 52' | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type

D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" fall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:

Earth Boring _____
 Rock Coring _____
 Samples _____

HOLE NO. _____

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 2
 DATE 1/12/72
 HOLE NO. 77
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -4.8(MHW)

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-508

| | | | | | |
|---|--|---------------------|---|------------------|---|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods-"AW" Type _____ Size I.D. <u>BW</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING <u>BW</u> | SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. BIT | Date _____ Time _____ START <u>1/11/72</u> _____ a.m. COMPLETE <u>1/12/72</u> _____ p.m. TOTAL HRS. _____ BORING FOREMAN <u>Al Whitake</u> INSPECTOR <u>K. Varnum</u> SOILS ENGR. _____ |
|---|--|---------------------|---|------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From-To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|-------|-----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6" | 6-12" | To 12-18" | | | | No. | Pen | Rec. |
| | PUSH | | | | | | | | | | | |
| | to 17' | 0'-2' | D | PUSH | | | | | Black Sandy Org. SILT | 1 | 24" | 11" |
| | | 2'-4' | UP | PUSH | | | | | | UP1 | 24" | 24' |
| | | 4'-8' | D | PUSH | | | | | | 2 | 48" | 14" |
| | | 11'-13' | D | PUSH | | | | | | 3 | 24" | 20" |
| | | 16'-18' | ST | PUSH | | | | 14.5' | Gray Org. SILT | ST1 | 24" | 18" |
| | 1 | 18'-20' | D | PUSH | | | | | | 4 | 24" | 14' |
| | 2 | | | | | | | | | | | |
| | 1 | 21'-23' | UP | PUSH | | | | | | UP2 | 24" | 20' |
| | 4 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | 4 | 23'-25' | D | PUSH | | | | | | 5 | 24" | 18" |
| | 4 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 4 | 29'-31' | UP | PRESS | | | | | | UP3 | 24" | 20' |
| | 7 | | | | | | | | | | | |
| | 12 | 31'-33' | D | PRESS | | | | 32.8' | | 6 | 24" | 18" |
| | 12 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 14 | | | | | | | 35' | Black Fine to Med. SAND, Little Silt | | | |
| | 7 | 36'-38' | D | 1 1 1 | | | | | Gray Org. Silt | 7 | 24" | 14" |
| | 6 | | | 1 | | | | | | | | |
| | 8 | | | Sample in Jar | | | | | | | | |
| | 7 | 39'-41' | ST | PUSH | | | | 40' | | 8 | 24" | 14" |
| | 11 | | | 7 | | | | | Dark Brown F-C SAND, Little Silt | | | |

| | | | |
|--|--|--|---|
| GROUND SURFACE TO _____ USED _____ CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>62'</u> Rock Coring _____ Samples <u>12</u> |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwell | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 30+ Hard | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE _____
 HOLE NO. 77
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|------------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | g.m. _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | p.m. _____ |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | |
| | | | | | | INSPECTOR _____ | |
| | | | | | | SOILS ENGR. _____ | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|-------|------------------------------|---------------------|---|--------|-----|------|-----|
| | | | | From 0-6 | To 6-12 | 12-18 | | | | No. | Pen | Rec. | |
| 47 | | | | | | | | 42' | Dark Brown Fine to Coarse Sand, Little Silt | | | | |
| 33 | | | | | | | | | Gray Coarse to Fine GRAVEL & SAND, Trace Silt | | | | |
| 47 | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | |
| 61 | 44'-46' | D | | 14 | 19 | 20 | | | | | 9 | 24" | 8" |
| 70 | | | | 24 | | | | | | | | | |
| 82 | | | | | | | | | | | | | |
| 59 | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | |
| 50 | 49'-51' | D | | 12 | 15 | 15 | | | | | 10 | 24" | 10" |
| 100 | | | | 18 | | | | | | | | | |
| 140 | | | | | | | | | | | | | |
| 95 | | | | | | | | | | | | | |
| 117 | | | | | | | | 55' | | | | | |
| 72 | 55'-57' | D | | 15 | 12 | 12 | | | Gray Fine to Coarse SAND, Little Silt | 11 | 24" | 10" | |
| 98 | | | | 11 | | | | | | | | | |
| 140 | | | | | | | | | | | | | |
| 260 | | | | | | | | | | | | | |
| 120 | | | | | | | | | | | | | |
| | 60'-62' | D | | 14 | 15 | 12 | | | | 12 | 24" | 12" | |
| | | | | 16 | | | | 62' | | | | | |
| | | | | | | | | | Bottom of Boring at 62' | | | | |

| | | | |
|--|---|---|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | |
| Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | 140 lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____ |
| | | 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | HOLE NO. <u>77</u> |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 1 OF 1
 DATE 1/12/72
 HOLE NO. 78
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -5.3 (MHW)

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO Taken at Site OUR JOB NO. 71-508

| GROUND WATER OBSERVATIONS | | Rods - "AW" Type | CASING Size I.D. | SAMPLER S/S | CORE BAR. BIT | Date | Time |
|---------------------------|-------------|---------------------|---------------------|----------------|------------------|----------------|--------------------|
| At _____ | after _____ | | | | | Hours | START |
| At _____ | after _____ | | BW | 1 3/8" | | 1/10/72 | _____ a.m. |
| At _____ | after _____ | | 300# | 1 40# | | 1/11/72 | _____ a.m. |
| | | | 24" | 30" | | TOTAL HRS. | |
| | | | | | | BORING FOREMAN | <u>Al Whitaker</u> |
| | | | | | | INSPECTOR | <u>R. Varnum</u> |
| | | | | | | SOILS ENGR. | |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | PUSH | | | | | | | | | | | |
| | to 0'-5' | D | PUSH | | | | | Black SILT, Trace Org. Material | 1 | 60" | 24" | |
| | 16' | | | | | | 4' | | | | | |
| | | 5'-7' | D | PUSH | | | | Gray Org. SILT | 2 | 24" | 19" | |
| | | 8'-10' | ST | PUSH | | | | | St | 124" | 14" | |
| | | 12'-14' | UP | PUSH | | | | | UP1 | 24" | 21" | |
| | | 14'-16' | D | PUSH | | | | | 3 | 24" | 20" | |
| | 1 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| | 1 | 20'-22' | ST | PUSH | | | | | ST2 | 24" | 19" | |
| | 1 | | | | | | | | | | | |
| | 2 | 22'-24' | D | PUSH | | | | | 4 | 24" | 18" | |
| | 3 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 1 | 27'-29' | UP | PUSH | | | | | UP2 | 20" | 18" | |
| | 4 | | | | | | | | | | | |
| | 4 | 29'-31' | D | PUSH | | | | | 5 | 24" | 18" | |
| | 6 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 6 | | | | | | | | | | | |
| | 8 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 8 | 35'-37' | UP | PUSH | | | | | UP3 | 24" | 17" | |
| | 16 | | | | | | | | | | | |
| | 20 | | | | | | | | | | | |
| | 20 | 37'-39' | D | 2 | 6 | 6 | | 37' | Black Fine to Med. SAND, Trace Silt | 6 | 24" | 13" |
| | 25 | | | | | | | | | | | |
| | 21 | | | | | | | | | | | |

| | | | |
|---------------------------------|------------------|---|----------------------------------|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | SUMMARY: Earth Boring <u>59'</u> |
| Sample Type | Proportions Used | 140lb Wt. x 30" tall on 2" O.D. Sampler | Rock Coring _____ |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Samples <u>11</u> |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | HOLE NO. _____ |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | |
| | | 50+ Very Dense | |
| | | Cohesive Consistency | |
| | | 0-4 Soft 30+ Hard | |
| | | 4-8 M/Stiff | |
| | | 8-15 Stiff | |
| | | 15-30 V-Stiff | |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2

DATE _____

HOLE NO. 78

LINE & STA. _____

OFFSET _____

SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-508

| | | |
|--|---|---|
| <p style="text-align: center;">GROUND WATER OBSERVATIONS</p> <p>At _____ after _____ Hours</p> <p>At _____ after _____ Hours</p> | <p style="text-align: center;">CASING SAMPLER CORE BAR.</p> <p>Type _____</p> <p>Size I.D. _____</p> <p>Hammer Wt. _____</p> <p>Hammer Fall _____</p> | <p style="text-align: center;">Date _____ Time _____</p> <p>START _____ o.m.</p> <p>COMPLETE _____ p.m.</p> <p>TOTAL HRS. _____</p> <p>BORING FOREMAN _____</p> <p>INSPECTOR _____</p> <p>SOILS ENGR. _____</p> |
|--|---|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 17 | | 41'-42.5' | D | 2 | 2 | 5 | | | Gray Stiff Org. SILT, with Fine Sand Layers | 7 | 18" | 18" |
| 16 | | 42.5-43' | D | 7 | | | | 42.5' | | 7A | 5" | 5" |
| 26 | | | | | | | | 43' | Brown Sandy PEAT | | | |
| 45 | | | | | | | | | Gray Fine to Med. SAND, with 1/2" Layers of Silt | 8 | 24" | 20" |
| 83 | | 45'-47' | D | 14 | 15 | 15 | | 47' | | | | |
| 81 | | | | 18 | | | | | Gray Fine SAND, Little Silt | | | |
| 63 | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | |
| 57 | | 50'-52' | D | 11 | 7 | 9 | | | | 9 | 24" | 18" |
| 30 | | | | 10 | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | |
| 42 | | 55'-57' | D | 9 | 10 | 10 | | | | | 10 | 24" |
| | | | | 10 | | | | | | | | |
| | | 57'-59' | D | 11 | 10 | 10 | | | | | 11 | 24" |
| | | | | 13 | | | | | | | | |
| | | | | | | | | 59' | | | | |
| | | | | | | | | | Bottom of Boring at 59' | | | |

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

| | | | | |
|--|---|--|---|---|
| <p>Sample Type</p> <p>D=Dry C=Cored W=Washed</p> <p>UP=Undisturbed Piston</p> <p>TP=Test Pit A=Auger V=Vane Test</p> <p>UT=Undisturbed Thinwall</p> | <p>Proportions Used</p> <p>trace 0 to 10%</p> <p>little 10 to 20%</p> <p>some 20 to 35%</p> <p>and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler</p> <p>Cohesionless Density</p> <p>0-10 Loose</p> <p>10-30 Med. Dense</p> <p>30-50 Dense</p> <p>50+ Very Dense</p> | <p>Cohesive Consistency</p> <p>0-4 Soft 30+ Hard</p> <p>4-8 M/Stiff</p> <p>8-15 Stiff</p> <p>15-30 V-Stiff</p> | <p>SUMMARY:</p> <p>Earth Boring _____</p> <p>Rock Coring _____</p> <p>Samples _____</p> <p style="text-align: right;">HOLE NO. _____</p> |
|--|---|--|---|---|

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO Haley & Aldrich, Inc. ADDRESS Cambridge, Mass.
 PROJECT NAME Providence Gas Co. LOCATION Providence, R.I.
 REPORT SENT TO above PROJ. NO. _____
 SAMPLES SENT TO " OUR JOB NO. 71-508

SHEET 1 OF 2
 DATE 1/7/72
 HOLE NO. 79
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -6.0' (MHW)

| | | | | | |
|---|--|-----------------------------------|--|------------------------------------|---|
| GROUND WATER OBSERVATIONS At _____ after _____ Hours At _____ after _____ Hours | Rods - "AW" Type _____ Size I.D. <u>4"</u> Hammer Wt. <u>300#</u> Hammer Fall <u>24"</u> | CASING _____ _____ _____ | SAMPLER <u>S/S</u> <u>1' 3/8"</u> <u>140#</u> <u>30"</u> | CORE BAR. _____ _____ BIT | Date _____ Time _____ START <u>1/4/72</u> <u>_____</u> <u>_____</u> p.m. COMPLETE <u>1/6/72</u> <u>_____</u> <u>_____</u> p.m. TOTAL HRS. _____ BORING FOREMAN <u>Whitaker</u> INSPECTOR <u>R. Varham</u> SOILS ENGR. _____ |
|---|--|-----------------------------------|--|------------------------------------|---|

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|------|------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No. | Pen. | Rec. |
| | P | | | | | | | | | | | |
| | U | 0'-3' | D | PUSH | | | | | Soft Black SILT, Trace Fine Sand | 1 | 36' | 18" |
| | S | | | | | | | | | | | |
| | H | | | | | | | | | | | |
| | 1 | 5'-7' | D | PUSH | | | | | | 2 | 24' | 18" |
| | 1 | | | | | | | | | | | |
| | 1 | 7'-9.5' | ST | PUSH | | | | 7' | | ST1 | 30' | 13" |
| | 1 | | | | | | | | | | | |
| | 1 | 10'-12' | UP | PUSH | | | | | | UP1 | 24' | 24" |
| | 1 | | | | | | | | | | | |
| | 1 | 12'-13.5' | D | PUSH | | | | | | 3 | 18' | 16" |
| | 1 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| | 1 | | | | | | | | | | | |
| | 2 | 16'-18' | UP | PUSH | | | | | | UP2 | 24' | 15" |
| | 2 | | | | | | | | | | | |
| | 3 | 18'-19.5' | D | PUSH | | | | | | 4 | 18' | 18" |
| | 4 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 5 | 23'-25' | ST | PUSH | | | | | | ST2 | 24' | 24" |
| | 5 | | | | | | | | | | | |
| | 6 | 25'-26.5' | D | PUSH | | | | | | 5 | 18' | 12" |
| | 7 | | | | | | | | | | | |
| | 7 | | | | | | | | | | | |
| | 7 | | | | | | | | | | | |
| | 9 | | | | | | | | | | | |
| | 6 | 31'-33' | UP | PUSH | | | | | | UP3 | 24' | 24" |
| | 9 | | | | | | | | | | | |
| | 10 | 33'-34' | D | PUSH | | | | | | 6 | 12' | 12" |
| | 10 | 34'-34.5' | D | PUSH | | | | | | 6A | 6" | 6" |
| | 12 | | | | | | | | | | | |
| | 12 | | | | | | | | | | | |
| | 14 | | | | | | | | | | | |
| | 23 | | | | | | | | | | | |
| | 33 | 38'-40' | ST | PRESS | | | | 39' | | ST3 | 24' | 24" |
| | 64 | | | | | | | | Gray Sandy SILT | | | |

| | | | | |
|---|--|---|--|---|
| GROUND SURFACE TO _____ Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall | USED _____ Proportions Used: trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50% | "CASING: THEN _____ 140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | _____ Cohesive Consistency 0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | SUMMARY: Earth Boring <u>55'</u> Rock Coring _____ Samples <u>10</u> HOLE NO. _____ |
|---|--|---|--|---|

SHEET 1 of 2
 DATE 11/10/71
 HOLE NO. 100
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. -25.5

| | | | | | | | |
|----------------------------|-------------------------|-------------|---------------|-----------|----------------|------------------|-------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | START | Date | Time |
| At _____ after _____ Hours | Type <u>Rods - "AW"</u> | <u>8/S</u> | <u>1 3/8"</u> | _____ | COMPLETE | <u>11/9/71</u> | _____ |
| At _____ after _____ Hours | Size I.D. <u>2 1/2"</u> | <u>300#</u> | <u>140#</u> | _____ | TOTAL HRS. | <u>11/10/71</u> | _____ |
| | Hammer Wt. <u>24"</u> | <u>30"</u> | _____ | BIT | BORING FOREMAN | <u>C. LARLEY</u> | _____ |
| | Hammer Fall _____ | _____ | _____ | _____ | INSPECTOR | _____ | _____ |
| | | _____ | _____ | _____ | SOILS ENGR. | _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Flows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-----------|-----------------------|-------------------------|----------------|-------------------------|-----------|-----------|------------------------------|---------------------|---|----------|------------|------------|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | No | Pen | Rec |
| | | <u>0'-1'6"</u> | <u>D</u> | <u>PUH</u> | | | <u>Wet Soft</u> | | <u>Black Organic Silt</u> | <u>1</u> | <u>18"</u> | <u>6"</u> |
| | | | | | | | | <u>4'6"</u> | | | | |
| | | | | | | | | <u>5'6"</u> | <u>Brown Silty Fine Sand</u> | | | |
| | | <u>5'6"-7'</u> | <u>D</u> | <u>10</u> | <u>15</u> | <u>22</u> | <u>Wet D.</u> | | <u>Black Organic SILT, little Fine to Coarse Sand, Trace Fine Gravel</u> | <u>2</u> | <u>18"</u> | <u>14"</u> |
| <u>16</u> | | | | | | | | | | | | |
| <u>32</u> | | | | | | | | | | | | |
| <u>46</u> | | <u>8'-9'6"</u> | <u>D</u> | <u>24</u> | <u>23</u> | <u>26</u> | <u>Wet D.</u> | | | <u>3</u> | <u>18"</u> | <u>16"</u> |
| <u>5</u> | | | | | | | | | | | | |
| <u>8</u> | | | | | | | | | | | | |
| <u>18</u> | | | | | | | | <u>13'</u> | | | | |
| <u>29</u> | | <u>13'-14'6"</u> | <u>D</u> | <u>15</u> | <u>15</u> | <u>13</u> | <u>Wet M.D.</u> | | <u>Brown Fine to coarse SAND, little Silt, Trace fine Gravel</u> | <u>4</u> | <u>18"</u> | <u>12"</u> |
| <u>37</u> | | | | | | | | | | | | |
| <u>11</u> | | | | | | | | | | | | |
| <u>26</u> | | | | | | | | | | | | |
| <u>52</u> | | | | | | | | | | | | |
| <u>49</u> | | <u>18'-19'6"</u> | <u>D</u> | <u>26</u> | <u>18</u> | <u>21</u> | <u>Wet D.</u> | | | <u>5</u> | <u>18"</u> | <u>6"</u> |
| <u>60</u> | | | | | | | | | | | | |
| <u>16</u> | | | | | | | | | | | | |
| <u>38</u> | | | | | | | | | | | | |
| <u>39</u> | | | | | | | | | | | | |
| <u>30</u> | | <u>23'-24'6"</u> | <u>D</u> | <u>28</u> | <u>18</u> | <u>18</u> | <u>Wet D.</u> | <u>24'6"</u> | | <u>6</u> | <u>18"</u> | <u>9"</u> |
| <u>49</u> | | | | | | | | | | | | |
| <u>13</u> | | | | | | | | | <u>Gray Fine to Medium Sand Some Silt</u> | | | |
| <u>26</u> | | | | | | | | | | | | |
| <u>32</u> | | | | | | | | | | | | |
| <u>40</u> | | | | | | | | | | | | |
| <u>33</u> | | | | | | | | | | | | |
| <u>38</u> | | <u>30'-31'6"</u> | <u>D</u> | <u>11</u> | <u>17</u> | <u>23</u> | <u>Wet D.</u> | | | <u>7</u> | <u>18"</u> | <u>15"</u> |
| <u>32</u> | | | | | | | | | | | | |
| <u>32</u> | | | | | | | | | | | | |
| <u>35</u> | | | | | | | | | | | | |
| <u>31</u> | | | | | | | | | | | | |
| <u>27</u> | | <u>35'9"-37'3"</u> | <u>D</u> | <u>6</u> | <u>9</u> | <u>17</u> | <u>Wet medium dense</u> | | | <u>8</u> | <u>18"</u> | <u>8"</u> |
| <u>30</u> | | | | | | | | | | | | |
| <u>33</u> | | | | | | | | | | | | |
| <u>39</u> | | | | | | | | | | | | |
| <u>42</u> | | | | | | | | | | | | |

| | | | |
|---------------------------------|------------------|---------------------|--|
| GROUND SURFACE TO _____ | USED _____ | "CASING: THEN _____ | 140lb Wt. x 30" fall on 2" O.D. Sampler |
| Sample Type | Proportions Used | | Cohesionless Density Cohesive Consistency |
| D=Dry C=Cared W=Washed | trace 0 to 10% | | 0-10 Loose 0-4 Soft 30+ Hard |
| UP=Undisturbed Piston | little 10 to 20% | | 10-30 Med. Dense 4-8 M/Stiff |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | | 30-50 Dense 8-15 Stiff |
| UT=Undisturbed Thinwall | and 35 to 50% | | 50+ Very Dense 15-30 V-Stiff |
| | | | SUMMARY: Earth Boring <u>64'6"</u> Rock Coring Samples <u>14</u> |
| | | | HOLE NO. _____ |

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 2
 DATE 11/10/71
 HOLE NO. 100
 LINE & STA. _____
 OFFSET _____
 SURF. ELEV. _____

TO _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. 71-442

| GROUND WATER OBSERVATIONS | | | CASING | SAMPLER | CORE BAR. | Date | Time |
|---------------------------|-------------|-------|-------------------|---------|-----------|----------------------|-------|
| At _____ | after _____ | Hours | Type _____ | _____ | _____ | START _____ | _____ |
| At _____ | after _____ | Hours | Size I.D. _____ | _____ | _____ | COMPLETE _____ | _____ |
| | | | Hammer Wt. _____ | _____ | BIT _____ | TOTAL HRS. _____ | _____ |
| | | | Hammer Fall _____ | _____ | _____ | BORING FOREMAN _____ | _____ |
| | | | | | _____ | INSPECTOR _____ | _____ |
| | | | | | _____ | SOILS ENGR. _____ | _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Flows per 6" on Sample | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 27 | | 40'3" - 41'9" D | A | 8 | 9 | 15 | Wet D. | 40' | Gray Fine to Medium Sand, Trace Silt (Running) | 9 | 18" | 18" |
| 30 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 21 | | 45' - 46'6" D | B | 13 | 17 | 27 | Wet D. | | | 10 | 18" | 7" |
| 28 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | |
| 28 | | 50' - 51'6" D | B | 13 | 15 | 19 | Wet D. | | | 11 | 18" | 10" |
| 31 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 52 | | | | | | | | | | | | |
| 42 | | | | | | | Wet | 55' | | | | |
| 32 | | 55' - 56'6" D | B | 13 | 17 | 29 | V.D. | | Gray Fine to Coarse SAND, Trace Silt (Running) | 12 | 18" | 6" |
| 30 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | |
| 78 | | | | | | | | | | | | |
| 80 | | 60' - 61'6" D | B | 13 | 27 | 44 | Wet V.D. | | | 13 | 18" | 5" |
| 80 | | | | | | | | | | | | |
| 116 | | | | | | | | | | | | |
| 101 | | | | | | | | | | | | |
| 107 | | | | | | | | | | | | |
| 57 | | 63' - 64'6" D | B | 10 | 21 | 26 | Wet V.D. | | | 14 | 18" | 12" |
| 97 | | | | | | | | | | | | |
| 137 | | | | | | | | | | | | |
| | | | | | | | | 64'6" | Bottom of Boring at 64'6" | | | |

GROUND SURFACE TO _____ USED _____ CASING: THEN _____

| | | | |
|---|--|---|---|
| <p>Sample Type D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p> | <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>140lb Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density Cohesive Consistency 0-10 Loose 0-4 Soft 30+ Hard 10-30 Med. Dense 4-8 M/Stiff 30-50 Dense 8-15 Stiff 50+ Very Dense 15-30 V-Stiff</p> | <p>SUMMARY: Earth Boring _____ Rock Coring _____ Samples _____</p> |
|---|--|---|---|

HOLE NO _____

TOWN PRESS - EAST PROV.

American Drilling & Boring Co., Inc.

100 WATER STREET EAST PROVIDENCE, R. I.

TO _____
 PROJECT NAME _____
 REPORT SENT TO _____
 SAMPLES SENT TO _____

ADDRESS _____
 LOCATION **PROV. GAS CO.**
 PROJ. NO. _____
 OUR JOB NO. _____

SHEET _____
 DATE _____
 HOLE NO. _____
 LINE & STA. _____
 OFFSET _____

| | | | | | |
|----------------------------|-------------------|--------|---------|-----------|----------------------------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR. | SURFACE ELEV. -29.58 |
| At _____ after _____ Hours | Type _____ | 2 1/2 | 5/8 | _____ | DATE STARTED 11-15-91 |
| At _____ after _____ Hours | Size I.D. _____ | 300 | 13/8 | _____ | DATE COMPL. _____ |
| | Hammer Wt. _____ | 24" | 140 | BIT | BORING FOREMAN C. GENTING |
| | Hammer Fall _____ | 30" | 30" | _____ | INSPECTOR _____ |
| | | | | | SOILS ENGR. _____ |

LOCATION OF BORING:

| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 5" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|---------|----------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-5 | To 6-12 | To 12-18 | | | | No. | Pen | Rec. |
| | | 0 - 1'6" | D | 0 | 5 | 4 | WET SOFT | | BRN ORGANIC SILT | 1 | 18 | 4" |
| | | 6' - 7'6" | D | 7 | 8 | 8 | WET M-B | 6' | DARK BR. F-C SAND LIT-LE F-M GRAVEL TR. SILT (ORGANIC MATTER) | 2 | 18 | 6" |
| 10 | 26 | 11' - 12'6" | D | 17 | 13 | 12 | WET M-B | 11' | GR. BR. F-C SAND SOME SILT TR. F-M GRAVEL | 3 | 18 | 6" |
| 33 | 45 | | | | | | | | | | | |
| 43 | | 6' 16 1/2" - 18' | D | 24 | 16 | 18 | WET M-B | | | 4 | 18 | 12 |
| 10 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 42 | | 18' 23 1/2" - 25' | D | 20 | 14 | 16 | WET M-B | | | 5 | 18 | 10 |
| 18 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 31 | | 29 1/2" - 30' | D | 17 | 14 | 17 | WET M-B | | | 6 | 18 | 9 |
| 40 | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | |
| 12 | | 33' - 34'6" | D | 6 | 5 | 5 | WET M-B | 33' | BROWN LITTLE F-C SAND TR. SILT SOME F-M GRAVEL | 7 | 18 | 8 |
| 23 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | |
| 11 | | 38' - 39'6" | D | 20 | 24 | 29 | WET Y-D | | BRN. F-C SAND LITTLE F-C GRAVEL | 8 | 18 | 8 |
| 16 | | | | | | | | | | | | |

GROUND SURFACE TO **70'**

USED **2 1/2"** CASING: THEN **SAMPLER**

Sample Type
 D=Dry C=Cored W=Washed
 UP=Undisturbed Piston
 TP=Test Pit A=Auger V=Vane Test
 UT=Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140lb Wt. x 30" tall on 2" O.D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY
 Earth Boring **73**
 Rock Coring **0**
 Samples **18**

HOLE NO. **102**

American Drilling & Boring Co., Inc.
 100 WATER STREET EAST PROVIDENCE, R.I.
 TO: _____ ADDRESS _____
 PROJECT NAME _____ LOCATION _____
 REPORT SENT TO _____ PROJ. NO. _____
 SAMPLES SENT TO _____ OUR JOB NO. _____

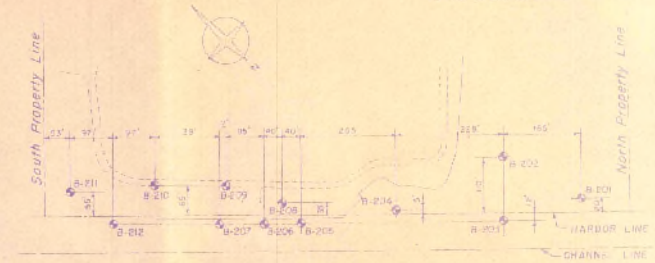
| | | | | | | |
|---------------------------|----------------------------|-----------------|------------------|-------------------|----------------|---------------------------------|
| GROUND WATER OBSERVATIONS | At _____ after _____ Hours | Type _____ | CASING _____ | SAMPLER _____ | CORE BAR _____ | SURFACE ELEV. _____ |
| | At _____ after _____ Hours | Size I.D. _____ | Hammer Wt. _____ | Hammer Fall _____ | BIT _____ | DATE STARTED _____ |
| | | | | | | BORING FOREMAN <u>C. CRATON</u> |
| | | | | | | INSPECTOR _____ |
| | | | | | | SOILS ENGR. _____ |

LOCATION OF BORING:

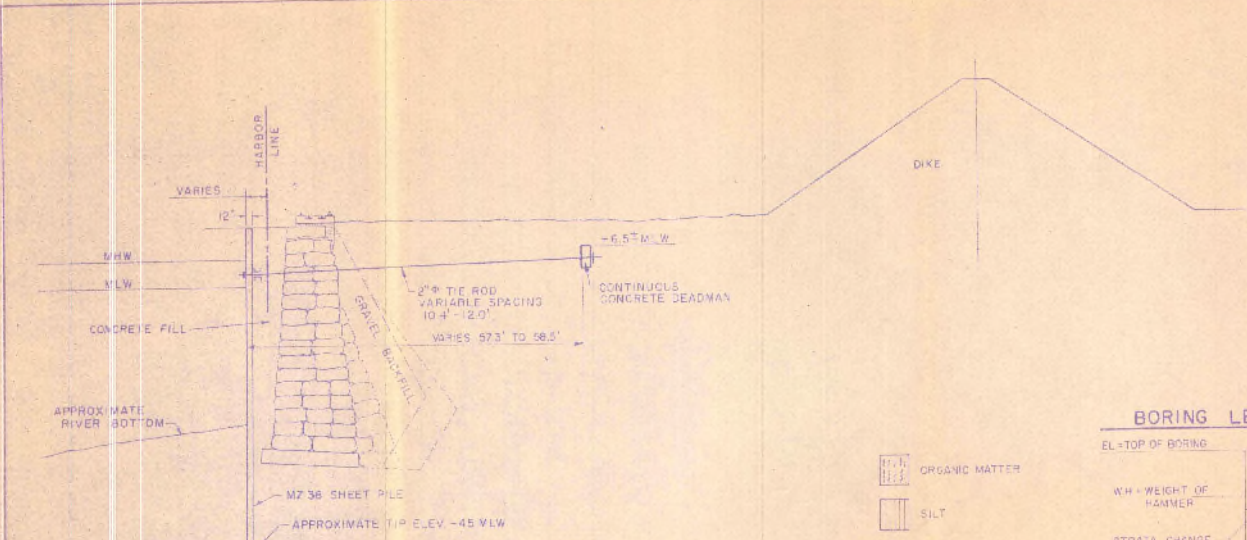
| DEPTH | Casing Blows per foot | Sample Depths From - To | Type of Sample | Blows per 6" on Sampler | | | Moisture Density or Consist. | Strata Change Elev. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc. | SAMPLE | | |
|-------|-----------------------|-------------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|------|
| | | | | From 0-6 | 6-12 | 12-18 | | | | No. | Pen | Rec. |
| 7 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 42 | | | | | | | | 44' 6" | | | | |
| 12 | 44' 6" - 46' | | D | 14 | 16 | 20 | WET | | GR. F-C SAND and SILT | 9 | 18 | 12 |
| 10 | 46' - 48' | | D | 20 | 21 | 29 | > 2" | SH | 13/1 TUBE | 11 | 24 | 20 |
| 20 | 49' - 50' 6" | | D | 5 | 7 | 8 | | | | 10 | 18 | 14 |
| 21 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 31 | 55' - 56' 6" | | D | 4 | 6 | 9 | WET 11-15 | | | 11 | 18 | 14 |
| 20 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 16 | 60' - 61' 6" | | D | 7 | 6 | 7 | WET 17-15 | 60' | GR. F-C SAND LITTLE M.C GRAVEL TR. SILT | 12 | 18 | 12 |
| 20 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 24 | | | | | | | | 64' | (RUNNING) | | | |
| 54 | | | | | | | | | | | | |
| 32 | 65' - 66' 6" | | D | 19 | 13 | 11 | WET 14-15 | 68' | GR. F-C SAND SILT & GRAVEL LIT FINE SAND | 12 | 14 | 9 |
| 40 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |
| 62 | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | |
| | 70' - 71' 6" | | D | 50 | 21 | 45 | WET 1-6 | | LITTLE F-C GRAVEL | - | 18 | 0 |
| | 71' 6" - 73' | | D | 26 | 30 | 34 | | 73' | (TILL) | 14 | 18 | 13 |
| | | | | | | | | | BOTTOM OF BORING 73' | | | |

| | | | | |
|---------------------------------|------------------|---|----------------------|--------------|
| GROUND SURFACE TO | USED | CASING: | THEN | SUMMARY |
| Sample Type | Proportions Used | 140lb Wt. x 30" fall on 2" O.D. Sampler | | Earth Boring |
| D=Dry C=Cored W=Washed | trace 0 to 10% | Cohesionless Density | Cohesive Consistency | Rock Coring |
| UP=Undisturbed Piston | little 10 to 20% | 0-10 Loose | 0-4 Soft 30 + Hard | Samples |
| TP=Test Pit A=Auger V=Vane Test | some 20 to 35% | 10-30 Med. Dense | 4-8 M/Stiff | |
| UT=Undisturbed Thinwall | and 35 to 50% | 30-50 Dense | 8-15 Stiff | |
| | | 50+ Very Dense | 15-30 V-Stiff | |

NOTE - COMPLETE BORING LOGS ARE ATTACHED TO THE SPECIFICATIONS



PROVIDENCE RIVER
BORING LOCATION PLAN
SCALE IN FEET

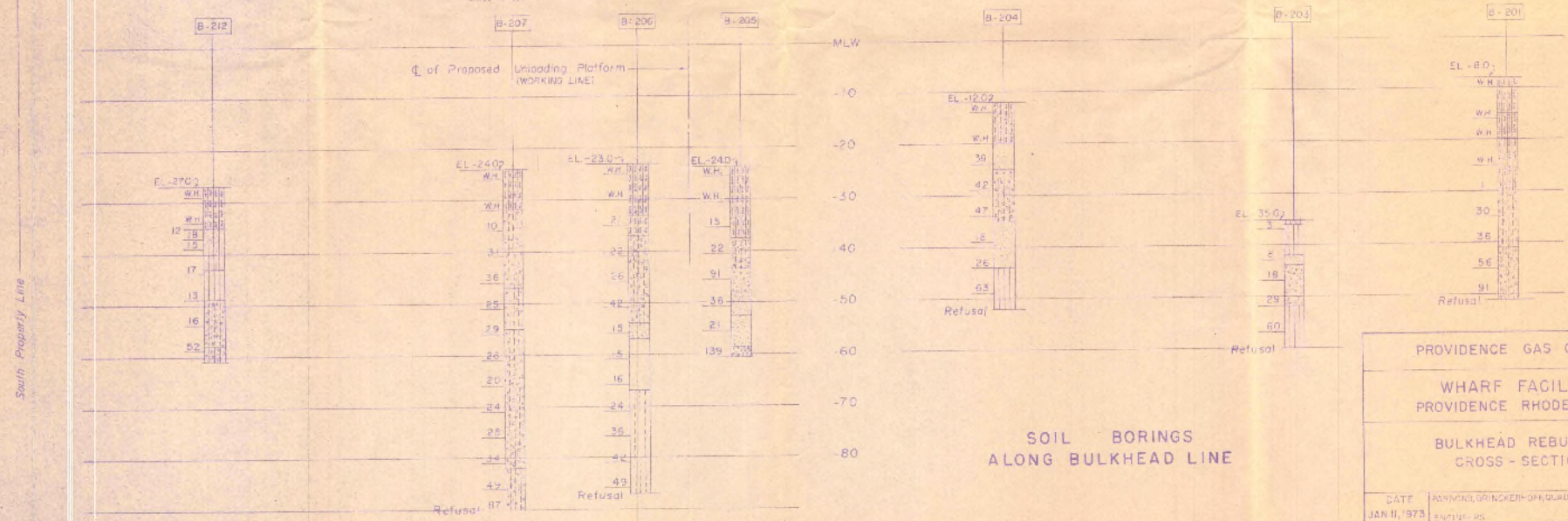


SECTION X-X
TYPICAL EXISTING CONDITION

- ORGANIC MATTER
- SILT
- SAND
- GRAVEL

BORING LEGEND

- EL - TOP OF BORING
 - W.H. - WEIGHT OF HAMMER
 - STRATA CHANGE
 - BLOWS ON SAMPLER
- SAMPLES OBTAINED USING 2" SPLIT SPOON SAMPLER DRIVEN 24 INCHES WITH 140 LB. HAMMER, 30 INCH DROP. BLOWS ON SAMPLER WHICH ARE SHOWN ON BORING ARE FOR A 12 INCHES OF DRIVING



SOIL BORINGS
ALONG BULKHEAD LINE

PROVIDENCE GAS COMPANY

WHARF FACILITIES
PROVIDENCE RHODE ISLAND

BULKHEAD REBUILDING
CROSS - SECTIONS

| | | |
|--------------|------------------------------|------------|
| DATE | PAYNON, BRINKERHOFF, DOUGLAS | DWG. NO. |
| JAN 11, 1973 | ENTRUS, RS | NEW YORK 3 |

D-17

| | |
|---|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 654.42 W 950.53 Groundwater Depth: 7 ft Contractor: American Drilling | Logged by: R.T. DeConto Date Start - Finish: 11/09/95 - 11/09/95 Ground Elevation: 9.704 ft Total Depth Drilled: 52 ft Rig Type: CME-75 |
|---|--|

Methods: **Casing Used:** None
Drilling Soil: 4.25" hollow-stem augers
Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
Drilling Rock: None

Comments: Groundwater depth as noted during drilling. WOR = Weight of Rods.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|---|
| | | Type | No. | | | | |
| 9.7 | 0 | | | | | SP-SM | Posthole to 4'. FILL: Gravelly sand, mostly fine, 10-20% subangular to subrounded gravel to 2 1/2" (some coke), 5-10% nonplastic fines, moist, dark brown, hydrocarbon odor. |
| | 5 | S | 1 | 2-3-2-2 (17.0") | 5 | SP-SM | S-1: Sand, fine to medium, mostly fine, 5-15% slightly plastic fines in pockets, light olive, some black staining, saturated with oil. |
| | | S | 2 | 3-4-8-15 (20.0") | 12 | SP-SM | S-2: Sand, fine to medium, mostly medium, 5-10% slightly plastic fines (mainly in 1-2" pockets), medium dense, mottled (light olive and black), saturated with oil, strong hydrocarbon odor. |
| | | S | 3 | 5-6-11-12 (18.0") | 17 | SP-SM | S-3: Similar to S-2, except 1 shell. |
| | 10 | S | 4 | 5-7-8-9 (22.0") | 15 | SP-SM | S-4: Gravelly sand, coarse to fine, mostly medium to fine, 10-20% subrounded to rounded gravel to 1", 5-10% nonplastic fines, medium dense, wet, light olive with black mottling, hydrocarbon odor. |
| | | S | 5 | 4-6-8-8 (17.0") | 14 | SP | S-5: Sand, poorly graded, coarse to fine, mostly medium to fine, 5-15% subrounded gravel to 1 1/4", <10% nonplastic fines, medium dense, wet, olive gray, slight hydrocarbon odor. |
| | 15 | S | 6 | 0-1-2-1 (9.0") | 3 | SP OL | S-6A (Top 4"): Similar to S-5. S-6B (Bot. 5"): Organic silt, moderately plastic, 5-10% fine to medium sand, soft, moist, brownish gray, hydrocarbon odor. |
| | | S | 7 | 0-1-1-1 | 2 | OL | S-7: Similar to S-6B, except pockets of dark gray, medium to fine sand. |
| | 20 | U | 1 | PUSH (19.0") | | OL | U-1: Organic silt, slightly plastic, 5-10% fine to medium sand, moist, dark olive, shells. |
| | | S | 8 | 0-1-1-1 (18.0") | 2 | OL | S-8: Organic silt, slightly plastic, 5-15% coarse to fine sand, mostly fine sand, very soft to soft, moist, brownish gray, trace organic fibers. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• **Sample Type:**

- S = Standard split-spoon
- U = Undisturbed tube

| | |
|------------------------|------------------|
| Approved DRB | Date 04/05/96 |
|------------------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------------------------|------------|--------|-----|-----------------------|-------------|------------|--|
| | | Type | No. | | | | |
| -15 | 25 | S | 9 | WOR-1-2-1 (20.0") | 3 | OL | S-9: Organic silt, moderately plastic, <5% fine sand, soft, moist, dark grayish brown, trace shell fragments, flat piece of shale. Driller noted change in strata between at 28'-29'. |
| -20 | 30 | S | 10 | 20-17-7-10 (10.0") | 24 | SP-SM | S-10: Sand, medium to fine, mostly fine, <5% subrounded gravel to 3/8", 5-10% slightly plastic fines, medium dense, wet, light gray, yellow brown staining. |
| -25 | 35 | S | 11 | 5-6-7-8 (15.0") | 13 | ML | S-11: Silt, slightly plastic, <10% fine sand, stiff, moist to wet, tan with occasional yellow brown mottling. |
| -30 | 40 | U | 2 | PUSH (16.0") | | ML | U-2: Similar to S-11. |
| -30 | 40 | S | 12 | 12-7-5-6 (16.0") | 12 | ML | S-12: Similar to S-11. |
| -35 | 45 | S | 13 | 4-4-4-5 (14.0") | 8 | ML | S-13: Silt, slightly plastic, 10-15% fine sand (mostly in 1-3" lenses), medium stiff to stiff, wet, medium gray, light grayish green in more sandy lenses. |
| -40 | 50 | S | 14 | 4-4-5-6 | 9 | ML | S-14: Similar to S-13. |
| BOTTOM OF BORING AT 52 FEET | | | | | | | |
| -45 | 55 | | | | | | |
| -50 | 60 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 529.20 W 882.80

Groundwater Depth: 10 ft

Contractor: American Drilling

Logged by: R.T. Deconto

Date Start - Finish: 10/24/95 - 10/24/95

Ground Elevation: 10.354 ft

Total Depth Drilled: 72 ft

Rig Type: CME-75

Depth to Bedrock:

Driller: R. Leger

Casing Used: None

Methods:

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|---|
| | | Type | No. | | | | |
| 10.4 | 0 | | | | | | Fill: Sandy gravel, well graded, gravel to 2". 20-30% fine to coarse sand, <10% nonplastic fines, dry, black, hydrocarbon odor. |
| | | S | 1 | 10-12-14-8 | 26 | GW | S-1: No recovery. |
| | | S | 2 | 4-5-5-9 | 10 | SM | S-2: Silty sand, <5% fine gravel, fine to coarse sand, mostly fine, 25-35% nonplastic to slightly plastic fines, loose to medium dense, damp, brown. |
| 5 | 5 | S | 3 | 8-5-3-4 | 8 | SM | S-3: Similar to S-2, except 5-10% fine gravel, loose, mottled (light and dark brown). |
| | | S | 4 | | | | S-4A (Top 6"): Silty sand, 5-10% subangular fine gravel, coarse to fine sand, mostly fine, 10-20% nonplastic to slightly plastic fines, very loose to loose, damp, tan with orange mottling. |
| | | S | 4 | 2-1-3-5 (18.0") | 4 | SM | |
| | | | | | | SP-SM | S-4B (Bot. 12"): Gravelly sand, 10-20% subrounded gravel to 1 1/2", fine to coarse sand mostly fine, 10-15% nonplastic fines, very loose to loose, wet, mottled (gray and light brown). |
| 0 | 10 | S | 5 | 2-3-2-3 | 5 | SP-SM | S-5: Gravelly sand, 15-20% slightly rounded, fine gravel, coarse to fine sand, mostly medium to fine, 5-10% nonplastic fines, loose, wet, gray. |
| | | S | 6 | 4-4-7-7 | 11 | SP-SM | S-6: Sand, widely graded, coarse to fine, mostly medium to fine, 5-10% nonplastic fines, medium dense, wet, gray. |
| -5 | 15 | S | 7 | 5-5-2-1 (14.0") | 7 | SM | S-7: Silty sand, mostly fine, <5% fine gravel to coarse sand, 20-30% nonplastic fines, loose, wet, medium gray; pockets of organic silt, moderately plastic, dark gray, hydrocarbon odor. |
| | | S | 8 | 3-3-4-6 (20.0") | 7 | SP-SM | S-8A (Top 14"): Sand, <5% rounded, fine gravel, coarse to fine sand, mostly medium to fine, 5-10% nonplastic fines, loose, wet, brown, slight hydrocarbon odor; pockets of organic silt, moderately plastic, dark gray. |
| | | | | | | OL | |
| | | S | 9 | 4-6-7-9 (18.0") | 13 | SW-SM | S-8B (Bot. 6"): Organic Silt, slightly to moderately plastic, <5% fine gravel, 5-10% coarse to fine sand, medium gray. |
| | | | | | | | S-9: Gravelly sand, widely graded, 10-15% rounded to subangular gravel to 1 1/4", coarse to fine sand, 5-15% nonplastic fines, medium, dense, wet, brownish gray, slight hydrocarbon odor. |
| -10 | 20 | S | 10 | 3-3-1-1 (8.0") | 4 | SW-SM | S-10: Similar to S-9, except very loose to loose. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:

S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRB | Date 04/05/96 |
|-----------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. Deconto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|----------------|---|
| | | Type | No. | | | | |
| -15 | 25 | S | 11 | 17-18-17-15 | 35 | SW-SM | S-11: Gravelly sand, widely graded, 15-20% rounded fine gravel, 5-15% nonplastic fines. dense, wet, brownish gray; 2" rounded piece of gravel in spoon tip. |
| -20 | 30 | S | 12 | 17-21-22-19 | 43 | GW-GM | S-12: Sandy gravel, widely graded, subrounded to max 1 1/4", 15-25% coarse to fine sand, 5-10% nonplastic fines, dense, wet, mottled (dark gray and tan). |
| -25 | 35 | S | 13 | 19-23-15-12 (13.0") | 38 | GW-GM ML | S-13A (Top 7"): Sandy gravel, widely graded, rounded to subrounded to 1 1/2" max., 20-30% coarse to fine sand, mostly coarse to medium, 5-10% nonplastic fines, dense, wet, black, organic odor; transitions quickly to silt. S-13B (Bot. 6"): Silt, nonplastic, <5% medium to fine sand, dense, light brown; pockets of sandy gravel, similar to S-13A. |
| -30 | 40 | S | 14 | 34-24-21-14 | 45 | | S-14: No recovery. |
| | | S | 15 | 7-8-8-15 | 16 | SW-GW | S-15: Gravelly sand, well graded, 30-40% rounded gravel to 1 1/4", coarse to fine, <5% nonplastic fines, medium dense, wet, gray brown, hydrocarbon odor. |
| -35 | 45 | S | 16 | 4-5-11-17 (14.0") | 16 | SP SW-SM | S-16A (Top 6"): Sand, coarse to fine, mostly medium to fine, <5% nonplastic fines, medium dense, dark gray. S-16B (Bot. 8"): Gravelly sand, widely graded, 20-25% rounded gravel to 1", fine to coarse sand, 10-15% nonplastic fines, medium dense, wet, dark gray. |
| -40 | 50 | S | 17 | 8-12-11-12 (20.0") | 23 | SP-SM ML | S-17A (Top 9"): Sand, coarse to fine, mostly medium to fine, 5-15% nonplastic fines, medium dense, dark gray. S-17B (Bot. 11"): Silt, nonplastic, <5% fine to medium sand, medium dense, wet, light brown; 2" sand parting. |
| -45 | 55 | S | 18 | 8-11-9-20 (18.0") | 20 | SP ML | S-18A (Top 10"): Sand, poorly graded, coarse to fine, mostly medium to fine, <5% nonplastic fines, medium dense, wet, olive gray. S-18B (Bot. 8"): Silt, nonplastic, dense, light brown, in contact with black silty gravel (graphite shale). |
| -50 | 60 | S | 19 | 15-18-23-24 (17.0") | 41 | SW-SW GW-GM | S-19A (Top 11"): Gravelly sand, widely graded, 10-20% fine gravel, 5-15% nonplastic fines, dense, wet, olive gray. S-19B (Bot 6"): Sandy gravel, widely graded, subrounded to rounded to 1 1/2" max., 35-45% coarse to fine sand, 5-10% nonplastic fines, dense, wet, dark olive gray. |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: **Fields Point, Providence, RI**

Logged by: **R.T. Deconto**

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|---|
| | | Type | No. | | | | |
| -55 | 65 | S | 20 | 3-5-6-14 (16.0') | 11 | GW-GM SP | S-20A (Top 8"): Similar to S-19B, except 10-15% slightly plastic fines; grades into uniform, fine sand. S-20B (Bot. 8"): Sand, uniform, fine, 5-10% subrounded fine gravel, <5% medium to coarse sand, <5% nonplastic fines, loose, wet, medium gray, hydrocarbon odor. Note: Blow counts may not be reliable due to wash at top of sample. |
| -60 | 70 | S | 21 | 9-11-15- 12 (18.0') | 26 | SP ML | S-21A (Top 8"): Sand, poorly graded, coarse to fine, mostly medium to fine, <5% nonplastic fines, medium dense, wet, dark gray; grades into finer sand with gravel at bottom 2". S-21B (Bot. 10"): Silt, nonplastic, 5-10% fine sand, medium dense, wet, gray. BOTTOM OF BORING AT 72 FEET |
| -65 | 75 | | | | | | |
| -70 | 80 | | | | | | |
| -75 | 85 | | | | | | |
| -80 | 90 | | | | | | |
| -85 | 95 | | | | | | |
| -90 | 100 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRS

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

Client: Algonquin LNG, Inc.

Date Start - Finish: 11/03/95 - 11/03/95

Coordinates: N 613.45 W 868.46

Ground Elevation: 9.95 ft

Groundwater Depth: 7 ft

Depth to Bedrock:

Total Depth Drilled: 72 ft

Contractor: American Drilling

Driller: R. Leger

Rig Type: CME-75

Methods:

Casing Used: None

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling. WOR = Weight of Rods.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|-------------|---|
| | | Type | No. | | | | |
| 9.9 | 0 | | | | | | Augered through asphalt to 2'. |
| | | S | 1 | 3-3-4-4 (24.0") | 7 | SP-SM | S-1A (Top 12"): Gravelly sand, 10-20% subangular to subrounded fine gravel, fine to coarse sand, mostly medium to fine, 5-10% nonplastic fines. loose, damp, mottled dark brown and reddish brown, damp, strong hydrocarbon odor. |
| | | S | 2 | 2-3-4-5 (24.0") | 7 | SP-SM | S-1B (Bot 8"): Sand, 5-10% fine gravel, mostly fine sand, 5-10% nonplastic fines; loose, moist, dark gray. |
| 5 | 5 | | | | | | S-2A (Top 8"): Similar to S-1A. |
| | | S | 3 | 2-4-2-2 (15.0") | 6 | SM | S-2B (Bot. 16"): Similar to S-1B, except hydrocarbon odor. |
| | | S | 4 | WOR/12-1-1 (5.0") | 1 | SM | S-3: Silty sand, 5-10% gravel to 1", mostly fine sand, <5% medium to coarse sand, 10-20% nonplastic to slightly plastic fines, loose, wet, dark gray, hydrocarbon odor. |
| 0 | 10 | | | | | | S-4: Similar to S-3, strong hydrocarbon odor; sample very oily. |
| | | S | 5 | WOR-1-1-1 (24.0") | 2 | SM-ML | S-5: Silty sand, 5-10% subrounded fine gravel, coarse to fine sand, mostly fine, 35-45% nonplastic fines, very loose, wet, light olive, hydrocarbon odor. |
| | | S | 6 | WOR/24 (24.0") | 0 | SP-SM | S-6: Sand, 5-10% fine gravel, coarse to fine sand, mostly medium to fine, 5-10% nonplastic fines, very loose, wet, brown gray. |
| -5 | 15 | | | | | | S-7: Similar to S-5. |
| | | S | 7 | WOR-1-2-2 (4.0") | 3 | SM-ML | |
| | | S | 8 | WOR-2-3-2 (24.0") | 5 | SW-SM ML | S-8A (Top 18"): Gravelly sand, widely graded, 20-30% subrounded gravel to 1 1/4", fine to coarse sand, 5-10% nonplastic fines, loose, wet, olive gray. |
| | | S | 9 | WOR-1-2-2 (18.0") | 3 | SW-SM OL | S-8B (Bot. 6"): Silt, slightly plastic, <5% fine to medium sand, medium stiff, wet, dark olive. |
| -10 | 20 | | | | | | S-9A (Top 6"): Similar to S-8A, except 10-20% fine gravel, very loose, hydrocarbon odor. |
| | | S | 10 | 3-6-8-11 (9.0") | 14 | SM | S-9B (Bot. 12"): Organic silt, slightly to moderately plastic, <5% fine to medium sand, soft, wet, dark olive, shell fragments. |
| | | | | | | | S-10: Silty sand, 5-15% subrounded gravel to 1 1/4", coarse to fine sand mostly fine, 20-30% slightly plastic fines, medium dense, wet, olive gray, trace shells. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:

- S = Standard split-spoon
- U = Undisturbed tube

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Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|--|
| | | Type | No. | | | | |
| | | S | 11 | 3-8-3-11 (9.0") | 11 | SW-SM | S-11: Gravelly sand, widely graded, 15-25% subrounded gravel to 1 1/4", 5-15% nonplastic fines, medium dense, wet, medium gray, strong hydrocarbon odor. |
| -15 | 25 | S | 12 | 7-8-11-12 (13.0") | 19 | OL SW-SM | S-12A (Top 4"): Similar to S-9B, except 5-15% medium to fine sand, very stiff. S-12B (Bot. 9"): Gravelly sand, widely graded, 25-35% subrounded gravel 5-10% nonplastic fines, medium dense, wet, mottled (medium gray and light brown.) |
| | | S | 13 | 8-6-8-11 (13.0") | 14 | GW | S-13: Sandy gravel, widely graded, subangular to subrounded gravel to 1 1/2", 30-40% fine to coarse sand, 5-10% nonplastic fines (mainly in lenses), medium dense, wet, gray. |
| -20 | 30 | S | 14 | 18-26-28-13 (16.0") | 54 | SP SW | S-14A (Top 4"): Sand, poorly graded, <5% fine gravel, fine to coarse sand mostly medium, <5% nonplastic fines, brown gray. S-14B (Bot. 12"): Gravelly sand, widely graded, 15-25% subrounded to subangular gravel to 1 1/8", fine to coarse sand, 5-10% nonplastic fines (mainly in lenses), very dense, wet, medium olive, hydrocarbon odor and slight ammonia odor. |
| -25 | 35 | S | 15 | 13-10-13-17 (22.0") | 23 | SP-SM ML | S-15A (Top 8"): Gravelly sand, 10-20% subangular to subrounded gravel to 1 1/4", fine to coarse sand, mostly fine to medium, 5-15% slightly plastic fines, medium dense, wet, olive gray; pockets of slightly plastic silt. S-15B (Bot. 14"): Silt, nonplastic to slightly plastic, 5-10% fine sand, medium dense, wet, light brown. |
| -30 | 40 | S | 16 | 7-6-8-15 (19.0") | 14 | SP ML | S-16A (Top 5"): Sand, poorly graded, <10% gravel to 1", coarse to fine sand, mostly medium to fine, medium dense, wet, brown gray. S-16B (Bot. 14"): Similar to S-15B, except fine sand in interbeds, mottled (tan and light brown), slight odor. |
| -35 | 45 | S | 17 | 8-11-10-15 | 21 | SP-SM ML | S-17A (Top 5"): Sand, <5% subrounded fine gravel, coarse to fine sand, mostly medium to fine, 5-15% nonplastic fines, medium dense, wet, gray brown; pockets of nonplastic to slightly plastic silt. S-17B (Bot. 13"): Silt, slightly plastic, 5-10% fine sand interbedded with silt, very stiff, wet, light gray olive and dark gray olive bands. |
| -40 | 50 | S | 18 | 10-9-6-11 (16.0") | 15 | SP-SM ML | S-18A (Top 2"): Similar to S-17A. S-18B (Bot. 14"): Similar to S-17B, except 5-15% fine sand, interbedded with silt. |
| -45 | 55 | S | 19 | 6-8-12-13 (17.0") | 20 | ML SP ML | S-19A (Top 7"): Similar to S-17B, except slightly plastic to nonplastic, 5-15% fine sand interbedded with silt. S-19B (Mid. 3"): Sand, poorly graded, fine to coarse, mostly medium, <5% nonplastic fines, medium dense, wet, light brown gray. S-19C (Bot. 7"): Similar to S-19A. |
| -50 | 60 | S | 20 | 19-18-25-30 (24.0") | 43 | ML-SM | S-20: Interlayered Sandy silt and Silty sand: Sandy silt, nonplastic, 25-45% fine sand, dense, wet, olive gray; and Silty sand, uniform, fine, 25-40% nonplastic fines, light olive gray. |

Note: See Sheet 1 for Boring Summary and Legend Information

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Site: **Fields Point, Providence, RI**

Logged by: **R.T. DeConto**

| Elev (ft) | depth (ft) † | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|------------------------------------|-----------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -55 | 65 | S | 21 | 40-28-32-30 | 60 | ML | S-21: Sandy silt, slightly plastic, 10-15% subangular gravel to 1", 30-40% fine sand, <5% medium to coarse sand, hard, wet, mottled (dark and light olive gray). |
| -60 | 70 | S | 22 | 19-21-24-27 | 45 | SM | S-22: Silty sand, uniform, fine, 30-40% slightly plastic fines (mostly in layers), dense, wet, gray. |
| BOTTOM OF BORING AT 72 FEET | | | | | | | |
| -65 | 75 | | | | | | |
| -70 | 80 | | | | | | |
| -75 | 85 | | | | | | |
| -80 | 90 | | | | | | |
| -85 | 95 | | | | | | |
| -90 | 100 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

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| | |
|--|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 522.83 W 637.45 Groundwater Depth: Contractor: American Drilling | Logged by: R.T. DeConto Date Start - Finish: 10/23/95 - 10/23/95 Ground Elevation: 10.97 ft Total Depth Drilled: 52 ft Rig Type: CME-75 Driller: R. Leger Depth to Bedrock: Casing Used: None |
|--|--|

Methods:
 Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Comments: Groundwater depth as noted during drilling. WOR = Weight of Rods.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|---|
| | | Type | No. | | | | |
| 11.0 | 0 | | | | | | Augered through FILL (subangular to subrounded gravel to 2") to 2'. |
| | 10 | S | 1 | 4-3-2-3 (14.0") | 5 | | S-1: Fill (gravel). |
| | 5 | S | 2 | 2-3-6-3 (14.0") | 9 | SM | S-2: Silty sand. 10-15% fine gravel, coarse to fine sand, mostly fine. 25-35% slightly plastic fines, loose, damp, dark brown. |
| | 5 | S | 3 | 5-4-3-5 (12.0") | 7 | SM | S-3: Similar to S-2, except 5-10% fine subangular to subrounded gravel, moist, light brown. |
| | | S | 4 | 2-2-2-4 (3.0") | 4 | | S-4: No sample description recorded. |
| | 10 | S | 5 | WOR-1-2-5 (8.0") | 3 | SP-SM | S-5: Gravelly sand, 25-35% subrounded to subangular gravel to 1", coarse to fine sand, mostly medium to fine. 5-15% slightly plastic fines, very loose, saturated soupy, light brown. |
| | 0 | S | 6 | 3-4-3-5 | 7 | | S-6: No description recorded. |
| | 15 | S | 7 | 3-3-4-5 (24.0") | 7 | SP-SM | S-7A (Top 14"): Gravelly sand, 10-20% coarse to fine gravel, coarse to fine sand, mostly medium to fine. 5-10% nonplastic fines, loose, wet, brown. |
| | -5 | S | 8 | 2-1-2-4 (18.0") | 3 | ML | S-7B (Bot 10"): Sandy silt, nonplastic. <5% fine gravel, <5% medium to coarse sand, 20-35% fine sand, loose, wet, gray, trace shells. S-8: Similar to S-7B, except very loose. |
| | 20 | S | 9 | 1-2-6-13 (14.0") | 8 | SW-SM | S-9: Gravelly sand, widely graded, 20-25% rounded gravel to 1 1/2", coarse to fine sand, 5-10% nonplastic fines, loose, wet, dark gray, hydrocarbon odor. |
| -10 | | | | | | | |

Legend/Notes

- Datum is NGVD 1929.
- indicates groundwater level.
- indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
 S = Standard split-spoon
 U = Undisturbed tube

| | |
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|------------------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------------------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -15 | 25 | S | 10 | 5-6-8-12 | 14 | SW-SM | S-10: Gravelly sand, widely graded, 15-25% subrounded fine gravel, 10-15% nonplastic fines, medium dense, wet, dark gray, hydrocarbon odor. |
| -20 | 30 | S | 11 | 7-8-10-14 (24.0") | 18 | SP | S-11: Sand, poorly graded, fine to coarse, mostly medium to fine, <10% nonplastic fines, medium dense, wet, dark gray, slight hydrocarbon odor. |
| -25 | 35 | S | 12 | 11-12-19-19 (24.0") | 31 | SP GW-GM | S-12A (Top 18"): Sand, poorly graded, <5% coarse sand, mostly fine to medium sand, <5% nonplastic fines, medium dense, wet, medium gray. S-12B (Bot. 6"): Sandy gravel, widely graded to 1 1/4" max., subrounded, 25-35% fine to coarse sand, 20-30% slightly plastic fines (mostly in lenses), dense, wet, gray. |
| -30 | 40 | S | 13 | 7-10-11-15 (24.0") | 21 | SP ML | S-13A (Top 8"): Sand, poorly graded, mostly medium to fine, <5% nonplastic fines, medium dense, wet, gray. S-13B (Bot. 16"): Silt, nonplastic to slightly plastic, medium dense, wet, light grayish brown. |
| -35 | 45 | S | 14 | 8-10-11-13 (18.0") | 21 | SP ML | S-14A (Top 6"): Similar to S-13A. S-14B (Bot. 12"): Similar to S-13B, except <5% medium to fine sand. |
| -40 | 50 | S | 15 | 5-10-15-28 (18.0") | 25 | SP SP-SM | S-15A (Top 4"): Similar to S-12A. S-15B (Mid. 4"): Similar to S-14B. S-15C (Bot. 10"): Gravelly sand, 15-25% subrounded fine gravel, coarse to fine sand, mostly fine, 15-20% nonplastic fines, medium dense, wet, tan with ironoxide staining. |
| BOTTOM OF BORING AT 52 FEET | | | | | | | |
| -45 | 55 | | | | | | |
| -50 | 60 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

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| | |
|--|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 528.49 W 1078.95 Groundwater Depth: 7 ft Contractor: American Drilling | Logged by: R.T. DeConto Date Start - Finish: 10/26/95 - 10/27/95 Ground Elevation: 9.755 ft Total Depth Drilled: 74 ft Rig Type: CME-75 Driller: R. Leger |
|--|--|

Methods: **Casing Used:** None

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------------|--|
| | | Type | No. | | | | |
| 9.8 | 0 | | | | | SP-SM | FILL: Silty Sand, 10-30% gravel to 1 1/2", fine to coarse sand, mostly fine, 5-10% nonplastic fines, dry, dark brown. |
| | | S | 1 | 4-5-6-8 (9.0") | 11 | SP-SM SM | S-1A (Top 4"): Similar to above, medium dense. S-1B (Bot. 5"): Silty sand, 5-10% subangular gravel to 1 1/2", fine to coarse sand, mostly fine, 10-20% nonplastic fines, medium dense, damp, brown. |
| | 5 | S | 2 | 7-5-4-2 (10.0") | 9 | SP-SM | S-2: Sand, 5-15% fine gravel (some slag), coarse to fine sand, mostly fine, 10-15% nonplastic fines, loose, moist, dark, brown, oily with hydrocarbon odor. |
| | | S | 3 | 7-6-5-5 (4.0") | 11 | SP-SM | S-3: Similar to S-2, except very oily and gray, wet. |
| | | S | 4 | 4-6-4-5 (8.0") | 10 | GW-GM | S-4: Sandy gravel, widely graded, elongate subrounded gravel to 1 1/4", 30-40% mostly fine, sand, 5-10% nonplastic fines, loose, wet, light gray, very oily, strong hydrocarbon odor. |
| | 10 | S | 5 | 3-3-3-5 | 6 | SW-SM | S-5: Gravelly sand, widely graded, 25-30% flat, elongate and subangular to subrounded gravel to 1 1/2", 5-10% nonplastic fines, loose, wet, brown gray, hydrocarbon odor. |
| | | S | 6 | 4-3-4-2 | 7 | SP | S-6: Gravelly sand, poorly graded, 10-20% subrounded gravel to 1 1/2", fine to coarse sand, mostly medium to fine, loose, wet, dark gray, hydrocarbon odor. |
| | 15 | S | 7 | 1-1-1-3 (12.0") | 2 | SP-SM ML | S-7A (Top 4"): Sand, 10-20% fine gravel, coarse to fine sand, mostly fine, 5-10% nonplastic fines, very loose, wet, dark gray, hydrocarbon odor, transitions to fine sand. S-7B (Bot. 8"): Silt, moderately plastic, <5% fine gravel, <5% coarse to fine sand, very soft to soft, wet, black, dilatant, shells. |
| | | S | 8 | 4-6-6-9 (18.0") | 12 | SP-SM ML | S-8A (Top 8"): Sand, <5% gravel to 1 1/2", coarse to fine sand, 5-10% nonplastic fines, medium dense, wet, mottled (light gray and brown); and Silty sand, uniform, fine, 30-40% nonplastic fines, black. |
| | | S | 9 | 5-8-9-9 (14.0") | 17 | SP-SM ML SP-SM | S-8B (Bot. 10"): Silt, slightly plastic, <5% sand, stiff, wet, mottled (gray and light brown). |
| -10 | 20 | S | 10 | 3-5-8-10 (14.0") | 13 | SM ML SP | S-9A (Top 2"): Similar to S-7A, except medium dense. S-9B (Mid. 6"): Silt, slightly to nonplastic, medium dense, wet, mottled (brown and olive gray), ironoxide staining, hydrocarbon odor. S-9C (Bot. 6"): Sand, uniform, medium to fine, 5-10% nonplastic fines, medium dense, wet, gray, micaceous. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

| | |
|------------------------|------------------|
| Approved DRB | Date 04/05/96 |
|------------------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -15 | 25 | S | 11 | 8-13-11-11 (14.0") | 24 | SW-SM ML | S-10A (Top 7"): Silty sand, widely graded, 5-10% subangular gravel to 3/4", fine to coarse sand, mostly medium, 20-30% nonplastic fines (mostly in lenses), medium dense, wet, dark gray, hydrocarbon odor. S-10B (Mid. 4"): Silt, nonplastic to slightly plastic, 5-15% fine sand, olive gray. S-10C (Bot. 3"): Gravelly sand, widely graded, 10-20 subangular to rounded gravel to 3/4", fine to coarse mostly medium sand, dark gray, oily hydrocarbon odor. S-11A (Top 8"): Sand, widely graded, 5-10% subrounded to subangular fine gravel, 5-15% nonplastic fines, medium dense, wet, mottled (dark and light gray and brown). S-11B (Bot. 6"): Sandy silt, slightly plastic, 10-20% fine sand, very stiff, wet, light brown; pockets of black sandy silt, slightly plastic. |
| -20 | 30 | S | 12 | 7-7-10-13 (12.0") | 17 | SW-SM ML | S-12A (Top 2"): Gravelly sand, widely graded, 10-15% subrounded gravel to 1", fine to coarse sand, 5-10% slightly plastic fines, medium dense, wet, dark olive gray. S-12B (Bot. 10"): Sandy silt, nonplastic to slightly plastic, 10-20% fine sand (mostly in occasional lenses), medium dense, wet, mottled (light olive brown, light red-brown), ammonia odor. |
| -25 | 35 | S | 13 | 5-7-10-16 | 17 | | S-13: No recovery. |
| | | S | 14 | PUSH (12.0") | | SM | S-14: Silty sand, <5% fine gravel, fine to coarse sand, mostly medium to fine, 10-20% nonplastic fines, wet, dark gray; elongate gravel to 2" in spoon, silty on bottom. |
| -30 | 40 | S | 15 | 6-8-7-12 (14.0") | 15 | SM | S-15: Silty sand, uniform, fine, 20-40% nonplastic fines, medium dense, wet, light brown, ammonia odor. |
| -35 | 45 | S | 16 | 8-10-13-16 (20.0") | 23 | SM | S-16: Similar to S-15, except light yellow-brown, one 3/4" subrounded piece of gravel, no odor. |
| -40 | 50 | S | 17 | 8-10-11-14 (12.0") | 21 | SM SP-SM | S-17A (Top 4"): Silty sand, uniform, fine, <5% gravel to 1 1/2", <5% medium to coarse sand, 20-30% nonplastic to slightly plastic fines, medium dense, wet, mottled (yellow brown and gray). S-17B (Bot. 8"): Sand, uniform, fine, 5-10% nonplastic fines, medium dense, wet, dark olive gray to brown, more olive at bottom. |
| -45 | 55 | S | 18 | 8-10-13-16 (14.0") | 23 | SP-SM | S-18: Sand, uniform, fine, 5-10% nonplastic fines, medium dense, wet, olive gray to brown, hydrocarbon odor. |
| -50 | 60 | S | 19 | 17-11-13-16 (15.0") | 24 | SP-SM | S-19: Sand, uniform, fine, 5-15% nonplastic fines, medium dense, wet, olive brown; occasional lenses of dark gray sandy silt. |

Note: See Sheet 1 for Boring Summary and Legend Information

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DRS

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -55 | 65 | S | 20 | 9-12-14-18 (16.0') | 26 | SP-SM | S-20: Sand, uniform, fine to medium, 5-10% nonplastic fines, medium dense, wet, dark olive gray, hydrocarbon odor. Note: Change in strata noted by driller; rig shaking at 68'. |
| -60 | 70 | S | 21 | 27-21-21-22 | 42 | | S-21: No recovery. |
| | | S | 22 | PUSH (8.0') | | SP-SM | S-22: Gravelly sand, 10-20% rounded to subrounded fine gravel, fine to medium sand, mostly fine, 5-15% nonplastic fines, wet, olive gray. |
| | | | | | | | BOTTOM OF HOLE AT 74 FEET |
| -65 | 75 | | | | | | |
| -70 | 80 | | | | | | |
| -75 | 85 | | | | | | |
| -80 | 90 | | | | | | |
| -85 | 95 | | | | | | |
| -90 | 100 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

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Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|--|
| | | Type | No. | | | | |
| | | S | 10 | 3-3-5-6 (23.0") | 8 | SM | S-10: Silty sand, 5-10% subrounded gravel to 1/2" (more gravel in top 13"), fine to coarse sand, mostly fine, 10-30% slightly plastic organic silt, loose, dark olive. some wood fibers in silt lenses. |
| -15 | 25 | S | 11 | 2-2-4-4 (22.0") | 6 | SM | S-11: Similar to S-10. |
| -20 | 30 | S | 12 | 13-11-16-18 (22.0") | 27 | ML SW ML | S-12A (Top 3"): Organic silt, slightly plastic, 5-10% gravel to 1/2", <5% fine to coarse sand, very stiff, black. S-12B (Mid. 5"): Gravelly sand, widely graded, 20-30% gravel to 1/2", medium dense, dark olive. S-12C (Bot. 12"): Sandy silt, nonplastic, 10-30% fine sand, medium dense, tan. |
| -25 | 35 | S | 13 | 16-15-17-20 (17.0") | 32 | SP SW-SM | S-13A (Top 9"): Sand, poorly graded, fine to medium, mostly fine, <5% nonplastic fines, dense, dark olive gray; slight organic odor. S-13B (Bot. 8"): Gravelly sand, widely graded, subangular gravel to 1 3/4", fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, light brown. |
| -30 | 40 | S | 14 | 15-23-28-20 (4.0") | 51 | GW-GM | S-14: Sandy gravel, widely graded, elongate subangular gravel to 1 1/2", 20-30% mostly fine sand, 5-10% nonplastic fines, very dense, dark olive. |
| -35 | 45 | S | 15 | 4-4-6-8 (14.0") | 10 | SW-SM SP-SM | S-15A (Top 5"): Gravelly sand, widely graded, 25-35% subrounded gravel to 1 1/2", fine to coarse sand, 10-15% slightly plastic fines in pockets, loose to medium dense, brown to dark olive. S-15B (Bot. 9"): Sand, uniform, fine (coarser at bottom of sample), 5-10% nonplastic fines, loose to medium dense, medium olive. |
| -40 | 50 | S | 16 | 11-11-12-11 (2.0") | 23 | SW-SM | S-16: Similar to S-15A. |
| | | S | 17 | 9-11-8-13 (16.0") | 19 | SW-SM SP-SM | S-17A (Top 4"): Gravelly sand, widely graded, 15-20% subangular gravel to 3/4", 10-15% slightly plastic fines, medium dense, medium gray brown. S-17B (Bot. 11"): Sand, uniform, fine, 5-10% nonplastic fines, medium dense, medium olive. |
| -45 | 55 | S | 18 | 16-15-16-18 (15.0") | 31 | SW SM | S-18A (Top 5"): Gravelly sand, well-graded, 15-25% elongate subrounded gravel to 2", fine to coarse sand, mostly fine, <5% nonplastic fines, dense, medium olive gray. S-18B (Bot. 10"): Silty sand, uniform, fine, 10-15% nonplastic fines, dense, medium olive. |
| -50 | 60 | S | 19 | 14-19-24-25 (14.0") | 43 | SP-SM | S-19: Sand, 5-10% subangular gravel to 1", fine to coarse sand, mostly fine, 5-10% nonplastic fines in pockets, dense, medium olive with darker bands. |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------------------------|---------------|--------|-----|--------------------------------|-------------------|----------------|--|
| | | Type | No. | | | | |
| -55 | 65 | S | 20 | 18-19-22- 24 (2.0") | 41 | SP-SM | S-20: Sand, <5% subrounded gravel to 1/2". fine to coarse sand, mostly fine, 5-15% slightly plastic fines, dense, dark olive. |
| -60 | 70 | S | 21 | 6-9-13-14 (11.0") | 22 | SP-SM SW-SM | S-21A (Top 4"): Similar to S-20, except mostly medium sand, slight hydrocarbon odor. S-21B (Bot. 7"): Gravelly sand, widely graded, 20-30% subrounded gravel to 1". fine to coarse sand, 5-10% nonplastic fines, medium dense, gray, slight hydrocarbon odor. |
| BOTTOM OF BORING AT 72 FEET | | | | | | | |
| -65 | 75 | | | | | | |
| -70 | 80 | | | | | | |
| -75 | 85 | | | | | | |
| -80 | 90 | | | | | | |
| -85 | 95 | | | | | | |
| -90 | 100 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

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04/05/96

| | |
|---|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 287.65 W 397.92 Groundwater Depth: 7 ft Contractor: American Drilling | Logged by: A.C. Smith Date Start - Finish: 11/06/95 - 11/06/95 Ground Elevation: 10.251 ft Total Depth Drilled: 9 ft Rig Type: CME-75 |
|---|--|

Methods: Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Casing Used: None

Comments: Moved approximately 40' south to avoid apparent concrete slab from former building #10. Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|--|
| | | Type | No. | | | | |
| 10.3 | 0 | | | | | | 0-1.5': Pea gravel and coarse sand. 0.5'-3.5': Silty sand, widely graded, 5-15% gravel, 5-15% nonplastic fines, dark brown. |
| | 5 | S | 1 | 12-5-2-2 (12.0") | 7 | | S-1A (Top 5"): Similar to above. S-1B (Bot. 7"): Broken brick and concrete. |
| | 5 | S | 2 | 8-8-12-16 (10.0") | 20 | | S-2: Broken brick and concrete. |
| | 10 | S | 3 | 7-6-5/5* (9.0") | > 11 | | S-3A (Top 4"): Similar to S-2. S-3B (Bot. 5"): Wood. |
| | 10 | | | | | | Hit obstruction at 9 feet: appears to be old concrete floor of building #10. Moved 3 feet north, hit obstruction at 9 feet. Moved 25 and 30 feet south, hit obstruction. Moved 40 feet south and continued drilling. |
| | 15 | | | | | | |
| | 20 | | | | | | |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- (') = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
 S = Standard split-spoon

| | |
|--------------|------------------|
| Approved | Date 04/05/96 |
|--------------|------------------|

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 327.65 W 397.92

Groundwater Depth:

Contractor: American Drilling

Depth to Bedrock:

Driller: R. Leger

Logged by: A.C. Smith

Date Start - Finish: 11/06/95 - 11/06/95

Ground Elevation: 10.251 ft

Total Depth Drilled: 62 ft

Rig Type: CME-75

Methods:

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Casing Used: None

Comments: Groundwater depth as noted during sampling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|------------|--|
| | | Type | No. | | | | |
| 10.3 | 0 | | | | | | |
| | 5 | | | | | | |
| | 10 | S | 4 | 3-3-6-7 (11.0") | 9 | GP-GM | S-4: Sandy gravel, subrounded, fine, 30-40% coarse to fine sand, 5-15% slightly plastic fines, loose, gray-brown, strong hydrocarbon odor. |
| | 15 | S | 5 | 12-14-7-8 (5.0") | 21 | GP-GM | S-5: Similar to S-4, except medium dense. |
| | 20 | S | 6 | 2-2-7-9 (12.0") | 9 | GP-GM | S-6: Similar to S-4. |
| | 25 | S | 7 | 7-8-13-20 (12.0") | 21 | GP-GM | S-7: Similar to S-4, except medium dense. |
| | 30 | S | 8 | 8-7-9-11 (16.0") | 16 | GM ML-GP | S-8A (Top 2"): Similar to S-4. S-8B (Bot. 14"): Silt, nonplastic, 15-25% fine sand, medium dense, brown; one slightly plastic layer 2" thick. |
| -10 | 35 | S | 9 | 6-5-6-8 (16.0") | 11 | SP-SM ML | S-9A (Top 10"): Sand, medium to fine, 5-10% nonplastic fines, medium dense, brown. S-9B (Bot. 6"): Silt, nonplastic, 15-25% fine sand, medium dense, brown. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:

S = Standard split-spoon

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: A.C. Smith

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N V a l u e | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-----------------------------------|---------------|--|
| | | Type | No. | | | | |
| -15 | 25 | S | 10 | 5-7-7-7 (16.0') | 14 | ML | S-10: Silt, nonplastic, 15-25% fine sand, medium dense, brown. |
| -20 | 30 | S | 11 | 5-6-6-9 (18.0') | 12 | ML | S-11: Similar to S-10. |
| -25 | 35 | S | 12 | 20-16-14-12 (11.0') | 30 | SP-SM | S-12A (Top 1"): Similar to S-10. S-12B (Bot. 15"): Gravelly sand, widely graded, 15-25% fine gravel, 5-15% nonplastic fines, medium dense, gray. |
| -30 | 40 | S | 13 | 7-10-13-19 (11.0') | 23 | SP | S-13: Sand, medium to fine, <10% nonplastic fines, medium dense, gray. |
| -35 | 45 | S | 14 | 19-14-23-25 (14.0') | 37 | SM SW-SM | S-14A (Top 10"): Silty sand, fine, 10-20% nonplastic fines, dense, brown. S-14B (Bot. 4"): Gravelly sand, widely graded, 35-45% fine gravel, 5-15% nonplastic fines, dense, gray. Note: Very gravelly while augering from 47 to 50 feet. |
| -40 | 50 | S | 15 | 28-32-36-42 (20.0') | 68 | SW | S-15: Gravelly sand, widely graded, 35-45% fine gravel, <10% nonplastic fines, very dense, gray. |
| -45 | 55 | S | 16 | 37-38-44-45 (17.0') | 82 | SW | S-16: Similar to S-15. |
| -50 | 60 | S | 17 | 28-17-14-22 | 31 | SW | S-17: Similar to S-15. |

BOTTOM OF BORING AT 62 FEET

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 356.88 W 938.96

Groundwater Depth: 7 ft

Contractor: American Drilling

Logged by: R.T. DeConto

Date Start - Finish: 10/25/95 - 10/25/95

Ground Elevation: 10.693 ft

Depth to Bedrock:

Total Depth Drilled: 62 ft

Driller: R. Leger

Rig Type: CME-75

Methods:

Casing Used: None

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|---|
| | | Type | No. | | | | |
| 10.7 | 0 | | | | | | Augered to 4'. Fill: Gravelly sand, widely graded, 10-20% subrounded gravel to 2", fine to medium sand, mostly fine, 10-15% nonplastic fines, loose, damp, dark brown, organics. |
| 10 | | | | | | | |
| | 5 | S | 1 | 6-1-7-3 | 8 | SM | S-1: Silty sand, widely graded, 10-15% subangular gravel to 3/4". 10-20% nonplastic fines, loose, damp, tan and orange mottled, wood on bottom of spoon tip. |
| | | S | 2 | 3-2-3-4 (14.0") | 5 | SM | S-2: Silty sand, widely graded, 5-10% subangular gravel, coarse to fine sand, mostly fine, 10-15% nonplastic fines, loose, saturated, tan, becomes oily and black at bottom 10". |
| | | S | 3 | 2-3-3-5 (14.0") | 6 | SP-SM | S-3: Sand, uniform, fine, 5-10% nonplastic fines (more silt at bottom of sample), loose, black; worm borrows; wood fibers at top of sample; oily top 4" of sample, organic odor. |
| | 10 | S | 4 | 2-3-4-7 (18.0") | 7 | SM | S-4: Silty sand, uniform, fine, 10-15% nonplastic fines, loose, dark olive to black; occasional silt lenses to 2"; organic odor, possibly hydrocarbons. |
| | | S | 5 | 8-7-8-9 (16.0") | 15 | SM | S-5A (Top 4"): Similar to S-4, except medium dense, oily and strong hydrocarbon odor. S-5B (Bot. 12"): Silty sand, uniform, fine, 10-20% nonplastic fines, medium dense, tan. |
| | 15 | S | 6 | 8-8-9-10 (19.0") | 17 | ML | S-6: Sandy silt, nonplastic, 10-20% fine sand, medium dense, tan, wood fibers on top of sample, hydrocarbon odor. |
| | | S | 7 | 9-10-10- 10 (17.0") | 20 | SM | S-7: Similar to S-5B, except 20-30% nonplastic fines, becoming more silty towards bottom of sample. |
| | | S | 8 | 3-5-5-9 (14.0") | 10 | SM | S-8: Silty sand, uniform, fine, 10-20% nonplastic fines, loose, to medium dense, light brown. |
| | 20 | S | 9 | 5-7-8-13 | 15 | SM | S-9: Silty sand, uniform, fine, 10-30% nonplastic fines, medium dense, light gray brown, becomes more silty towards bottom of sample, trace organic matter. |
| -10 | | | | | | | |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

Approved
DJB

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|---|
| | | Type | No. | | | | |
| -15 | 25 | S | 10 | 3-4-9-10 (16.0') | 13 | SP-SM | S-10: Sand, rounded to subrounded, fine to medium, mostly medium, 5-10% nonplastic fines, medium dense, black due to oily coating, possible hydrocarbons (strong odor). |
| -20 | 30 | S | 11 | 5-8-13-14 (15.0') | 21 | SP | S-11: Sand, poorly graded, rounded to subrounded, fine to medium, mostly medium, <5% nonplastic fines, medium dense, dark olive gray, hydrocarbon odor. |
| -25 | 35 | S | 12 | 6-8-12-14 (14.0') | 20 | SP-SM | S-12: Sand, uniform, subrounded to rounded, fine, 5-10% nonplastic fines, medium dense, dark olive gray, hydrocarbon odor; becomes more silty at bottom of sample. |
| -30 | 40 | S | 13 | 24-32-37-23 (14.0') | 69 | SP-SM GW-GM | S-13A (Top 6"): Similar to S-12. S-13B (Bot. 8"): Sandy gravel, widely graded, subangular to subrounded gravel to 1 1/2", 10-20% fine to coarse sand, 10-20% slightly plastic fines (mainly in pockets), very dense, mottled (dark gray green and orange). |
| -35 | 45 | S | 14 | 21-27-30-33 (14.0') | 57 | GW-GM | S-14: Sandy gravel, widely graded, subangular to subrounded to 1 1/2", 15-20% fine to coarse sand, mostly fine, 10-15% slightly plastic fines (mainly in pockets), very dense, dark olive gray with orange iron oxide staining. |
| -40 | 50 | S | 15 | 17-11-13-16 | 24 | SP-SM | S-15: Gravelly sand, widely graded, subangular to subrounded and flat gravel to 1", fine to coarse sand, mainly fine, 5-10% nonplastic fines, medium dense, light yellow brown, hydrocarbon odor. |
| -45 | 55 | S | 16 | 10-17-9-8 (6.0') | 26 | SP-SM | S-16: Similar to S-15, except gray olive. |
| | | S | 17 | 5-7-9-13 | 16 | | S-17: No recovery. |
| -50 | 60 | S | 18 | 4-6-12-15 | 18 | | S-18: No recovery. |

BOTTOM OF BORING AT 62 FEET

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 326.35 W 738.33

Groundwater Depth:

Contractor: American Drilling

Depth to Bedrock:

Driller: R. Leger

Logged by: A.C. Smith

Date Start - Finish: 10/19/95 - 10/19/95

Ground Elevation: 11.978 ft

Total Depth Drilled: 18 ft

Rig Type: CME-75

Methods:

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Casing Used: None

Comments: Observation well installed by resource. Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------------------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| 12.0 | 0 | | | | | | |
| | 10 | S | 1 | 17-24-28-26 (14.0") | 52 | SW-SM | S-1: Gravelly sand, widely graded, 20-30% subangular gravel to 1.5", 5-15% nonplastic fines, very dense, damp, brown. |
| | 5 | S | 2 | 10-16-17-19 (5.0") | 33 | SW-SM | S-2: Similar to S-1, except dense. |
| | 5 | S | 3 | 20-28-17-15 (8.0") | 45 | SW-SM | S-3: Similar to S-1, except dense. |
| | 10 | S | 4 | 8-10-11-11 (10.0") | 21 | GP-GM | S-4: Sandy gravel, subrounded to 1", 10-20% fine to coarse sand, 5-10% nonplastic fines, medium dense, saturated, brown. |
| | 0 | S | 5 | 5-8-10-13 (9.0") | 18 | GP-GM | S-5: Similar to S-4. |
| | 15 | S | 6 | 9-10-13-13 (11.0") | 23 | GP-GM | S-6: Similar to S-4. |
| | 5 | S | 7 | 5-8-9-9 (5.0") | 17 | SW-SM | S-7: Gravelly sand, widely graded, 10-20% subrounded gravel to 1.5", fine to coarse sand, 5-15% nonplastic fines, medium dense, brown. |
| | 20 | S | 8 | 8-12-9-11 (10.0") | 21 | SW-SM | S-8: Similar to S-7. |
| BOTTOM OF BORING AT 18 FEET | | | | | | | |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRB | Date 04/05/96 |
|-----------------|------------------|

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 326.35 W 741.33

Groundwater Depth:

Contractor: American Drilling

Logged by: A.C. Smith

Date Start - Finish: 10/20/95 - 10/20/95

Ground Elevation: 11.978 ft

Depth to Bedrock:

Driller: R. Leger

Total Depth Drilled: 42 ft

Rig Type: CME-75

Methods:

Casing Used: None

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Moved 3 ft. east of SWBL-11. Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|---|
| | | Type | No. | | | | |
| 12.0 | 0 | | | | | | |
| 10 | | | | | | | |
| 5 | | | | | | | |
| 5 | | | | | | | |
| 10 | | | | | | | |
| 0 | | | | | | | |
| 15 | | | | | | | |
| -5 | | | | | | | |
| 20 | | S | 9 | S-8-9-14 (5.0') | 17 | SW-SM | S-9: Gravelly sand, widely graded, 10-20% subrounded fine gravel, fine to coarse sand, 5-15% nonplastic fines, medium dense, saturated, brown-gray. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:
S = Standard split-spoon

Approved
DRS

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: A.C. Smith

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N V u _c | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|---------------------------------|---------------|---|
| | | Type | No. | | | | |
| -10 | | | | | | | |
| | 25 | S | 10 | 32-21-13-15 (11.0") | 34 | | S-10: Similar to S-9, except dense. |
| -15 | | | | | | | |
| | 30 | S | 11 | 4-6-6-8 (12.0") | 12 | SM-ML | S-11: Silty sand, uniform, fine, 40-50% nonplastic fines, medium dense; stratified with sandy silt, nonplastic, 40-50% fine sand, brown and gray. |
| -20 | | | | | | | |
| | 35 | S | 12 | 4-8-12-13 (17.0") | 20 | SM | S-12: Silty sand, uniform, fine, 35-50% nonplastic fines, medium dense, brown; 2 1/4" thick layers of clay separated by a 1 1/2" silt layer. |
| -25 | | | | | | | |
| | 40 | S | 13 | 2-6-8-12 (16.0") | 14 | | S-13: Silty sand, uniform, fine, medium dense, brown; stratified with nonplastic silt layers to 1". |
| -30 | | | | | | | |
| | | | | | | | BOTTOM OF BORING AT 42 FEET |
| -35 | | | | | | | |
| | 45 | | | | | | |
| -40 | | | | | | | |
| | 50 | | | | | | |
| -45 | | | | | | | |
| | 55 | | | | | | |
| -50 | | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRS

Date
04/05/96

Site: Fields Point, Providence, RI

Logged by: A.C. Smith

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|---|
| | | Type | No. | | | | |
| -10 | | S | 10 | 5-8-8-8 (22.0') | 16 | SP | S-10: Similar to S-9C, except medium dense. |
| 25 | | S | 11 | 4-5-6-9 (12.0') | 11 | SP SW-SM | S-11A (Top 8"): Similar to S-10. S-11B (Bot. 4"): Gravelly sand, 5-15% subrounded fine gravel, fine to coarse sand, 5-15% nonplastic fines, medium dense, wet, brown. Note: Gravelly between 27'-30'. |
| -15 | | | | | | | |
| 30 | | S | 12 | 4-11-15-20 (20.0') | 26 | SP-SM | S-12: Sand, <5% fine gravel, fine to medium sand, 5-10% nonplastic fines, medium dense, wet, black; 3" thick layer of silty sand, uniform, fine, 10-20% nonplastic fines. |
| -20 | | | | | | | |
| 35 | | S | 13 | 8-11-21-22 (18.0') | 32 | SP-SM SM | S-13A (Top 12"): Similar to S-12, except dense. S-13B (Bot. 6"): Silty sand, uniform, fine, 15-25% nonplastic fines, dense, wet, gray-brown. |
| -25 | | | | | | | |
| 40 | | S | 14 | 6-12-14-18 (24.0') | 26 | SP | S-14: Sand, poorly graded, mostly fine to medium, <5% nonplastic fines, medium dense, wet, brown. |
| -30 | | | | | | | |
| 45 | | S | 15 | 9-9-12-19 (16.0') | 21 | SM | S-15: Silty sand, uniform, fine, 15-25% nonplastic fines, medium dense, wet, brown. |
| -35 | | | | | | | |
| 50 | | S | 16 | 10-12-14-16 | 26 | SM | S-16: Similar to S-15. |
| -40 | | | | | | | |
| | | | | | | | BOTTOM OF BORING AT 52 FEET |
| 55 | | | | | | | |
| -45 | | | | | | | |
| 60 | | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

Site: Fields Point, Providence, RI

Client: Algonquin LNG, Inc.

Coordinates: N 419.28 W 1094.88

Groundwater Depth:

Depth to Bedrock:

Contractor: American Drilling

Driller: R. Leger

Logged by: R.T. DeConto

Date Start - Finish: 11/02/95 - 11/02/95

Ground Elevation: 10.47 ft

Total Depth Drilled: 52 ft

Rig Type: CME-75

Methods:

Casing Used: None

Drilling Soil: 4.25" hollow-stem augers

Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer

Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|----------------|--|
| | | Type | No. | | | | |
| 10.5 | 0 | | | | | | Post hole to 4", FILL. |
| 10 | | | | | | | |
| | 5 | S | 1 | 4-3-2-2 (14.0") | 5 | SW-SM | S-1: Gravelly sand, widely graded, 10-20% subangular gravel to 3/4". fine to coarse sand, 5-10% nonplastic fines, loose, damp, light brown, some roots, slight hydrocarbon odor, dark oily band at bottom of sample. |
| | | S | 2 | 3-4-4-6 (12.0") | 8 | SW-SM | S-2: Similar to S-1, except very oily, strong hydrocarbon odor, light gray bottom 4" of sample. |
| | | S | 3 | 4-4-5-7 (16.0") | 9 | SW-SM SP-SM | S-3A (Top 4"): Similar to S-2. S-3B (Bot. 12"): Silty sand, uniform, fine, 10-15% nonplastic fines, loose, light gray, very oily, hydrocarbon odor. Did not collect sample, too oily. |
| 0 | 10 | S | 4 | 6-7-9-11 (17.0") | 16 | SP-SM | S-4: Sand, uniform, fine, <5% subrounded gravel to 1 1/2" (shale), 5-10% nonplastic fines, medium dense, gray brown, very oily, strong hydrocarbon odor. |
| | | S | 5 | 9-11-14-15 (15.0") | 25 | SW-SM GW-GM | S-5A (Top 6"): Sand, fine to coarse, 5-10% nonplastic fines in lenses, medium dense, brown. S-5B (Bot. 9"): Sandy gravel, widely graded, subangular to subrounded to 1 1/2", fine to coarse sand, 5-15% nonplastic fines, medium dense, brown, strong hydrocarbon odor. |
| | 15 | S | 6 | 7-8-10-15 (8.0") | 18 | SP | S-6: Sand, poorly graded, 5-10% subrounded gravel to 1", fine to medium sand, mostly medium, medium brown, hydrocarbon odor. |
| -5 | | S | 7 | 15-9-6-4 (18.0") | 15 | SP | S-7: Similar to S-6. |
| | | S | 8 | 16-16-14-16 (1.0") | 30 | SP | S-8: Sandy gravel, similar to S-5B. |
| -10 | 20 | S | 9 | 20-16-9-8 (5.0") | 25 | GP-GM | S-9: Sandy gravel, poorly graded, flat, subrounded gravel to 1 1/4", 15-20%, fine to coarse sand, 5-10% nonplastic fines, medium dense, light brown and black, hydrocarbon odor. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

Sample Type:

S = Standard split-spoon

Approved

DRB

Date

04/05/96

| | |
|--|--|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 328.47 W 650.69 Groundwater Depth: 11 ft Contractor: American Drilling | Logged by: R.T DeConto Date Start - Finish: 10/27/95 - 10/27/95 Ground Elevation: 11.945 ft Total Depth Drilled: 52 ft Driller: R. Leger Rig Type: CME-75 |
|--|--|

Methods: **Casing Used:** None

Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|-------------|---|
| | | Type | No. | | | | |
| 11.9 | 0 | | | | | | Augered to 2'. Fill: Gravelly sand, poorly graded, gravel to 3", fine to coarse sand, mostly fine, dark brown, 4" piece of wood fiber. |
| | 10 | S | 1 | 7-13-6-3 (14.0") | 19 | SW-SM | S-1: Gravelly sand, widely graded, subangular gravel to 1" (coal slag), fine to coarse sand, 5-10% nonplastic fines, dark brown, dry wood and concrete in spoon tip. Note: Augered through concrete rubble from 4-5'. |
| | 5 | S | 2 | 8-10 (6.0") | | SW-SM | S-2: Similar to S-1, except 30-40% gravel. |
| | 5 | S | 3 | 22-43-50-72 (16.0") | 93 | GP-GM | S-3: Sandy gravel, subangular to subrounded gravel to 1 1/2" (slag and concrete), 20-30% fine to coarse sand, mostly fine, 10-15% nonplastic fines, very dense, damp, dark brown; wood fibers, ammonia odor. High blow counts due to 3" concrete fragment. |
| | 10 | S | 4 | 13-44-62-84 (18.0") | 106 | SW-SM | S-4: Gravelly sand, widely graded, subangular gravel to 1 1/8" max., fine to coarse sand, 5-10% nonplastic fines, very dense, damp, dark brown. |
| | 0 | S | 5 | 24-38-26-30 (18.0") | 64 | SP-SM | S-5: Gravelly sand, subangular to subrounded gravel to 1 1/4" max., fine to coarse sand, mostly fine, 5-15% slightly plastic fines, very dense, wet, dark brown; wood fibers, oily, ammonia odor. |
| | 0 | S | 6 | 13-14-21-24 (19.0") | 35 | GW-GM | S-6: Sandy gravel, widely graded, subrounded to rounded, 30-40% fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, wet, dark brown; top 16" are oily, bottom 3" are yellow brown (possibly natural). |
| | 15 | S | 7 | 3-7-8-9 (12.0") | 15 | GW-GM | S-7: Sandy gravel, widely graded, subangular to subrounded to 1 1/2" (elongate and flat granitic shales), 30-40% fine to coarse sand, 5-15% nonplastic to slightly plastic fines, medium dense, wet, yellow brown to olive; slight ammonia odor, wood fibers. |
| | -5 | S | 8 | 11-16-17-24 (18.0") | 33 | SW | S-8: Gravelly sand, well-graded, subangular to rounded, generally elongate gravel to 1" max., fine to coarse sand, dense, wet, dark brown. |
| | 20 | S | 9 | 33-28-28-25 (19.0") | 56 | SP GW-GM | S-9A (Top 5"): Sand, uniform, medium, <5% nonplastic fines, very dense, wet, dark brown. S-9B (Bot. 12"): Similar to S-7, except very dense. |
| | 20 | S | 10 | 13-23-26-28 (16.0") | 49 | GW-GM | S-10: Sandy gravel, widely graded, subangular to 1" (mainly elongate), fine to coarse sand, mostly coarse, 5-10% slightly plastic fines, dense, wet, light yellow-red and brown-gray; fines occur in pockets, binding gravel. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRB | Date 04/05/96 |
|-----------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T DeConto

| Elev (ft) | depth (ft) | Sample | | Blows of Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|---|
| | | Type | No. | | | | |
| -10 | | S | 11 | 14-26-36-39 (20.0") | 62 | SP-SM GW-GM | S-11A (Top 10"): Sand, 5-10% subrounded gravel to 3/4" max., fine to coarse sand, mostly medium, 5-10% nonplastic fines, very dense, wet, dark brown. S-11B (Bot. 10"): Similar to S-10, except very dense, medium olive brown. |
| 25 | | S | 12 | 24-26-26-28 (15.0") | 52 | GW-GM SP | S-12A (Top 4"): Similar to S-11B. S-12B (Bot. 11"): Sand, poorly graded, 10-15% elongate rounded gravel to 3/4", fine to coarse sand, mostly fine, very dense, wet, dark brown, hydrocarbon odor. |
| -15 | | | | | | | |
| 30 | | S | 13 | 21-26-32-38 (17.0") | 58 | SP GW-GM | S-13A (Top 8"): Sand, uniform, fine, <5% nonplastic fines, very dense, wet, medium brown; micaceous, slight hydrocarbon odor. S-13B (Bot. 9"): Sandy gravel, widely graded, subangular to 1 3/4", fine to coarse sand, mostly fine, 5-15% nonplastic fines, very dense, wet, mottled (gray and black). |
| -20 | | | | | | | |
| 35 | | S | 14 | 12-10-10-11 (12.0") | 20 | SW-SM | S-14: Gravelly sand, widely graded, 25-35% subangular to subrounded gravel to 1 1/4", fine to coarse sand, mostly coarse, 5-10% nonplastic fines, medium dense, wet, dark olive gray. |
| -25 | | | | | | | |
| 40 | | S | 15 | 27-26-18-24 (20.0") | 44 | SP SW-SM | S-15A (Top 5"): Sand, poorly graded, <5% fine gravel, fine to coarse sand, mostly medium, <5% nonplastic fines, dense, wet, dark brown. S-15B (Bot. 15"): Gravelly sand, widely graded, subangular to subrounded gravel to 1 1/4", fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, wet, mottled (dark gray and medium olive). |
| -30 | | | | | | | |
| 45 | | S | 16 | 14-19-24-36 (16.0") | 43 | SP GW-GM | S-16A (Top 7"): Similar to S-15A, except no gravel, fine to medium sand, mostly fine, hydrocarbon odor. S-16B (Bot. 19"): Sandy gravel, widely graded, subangular to subrounded to 1 1/2", 25-35% fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, wet, mottled (gray and black), hydrocarbon odor. |
| -35 | | | | | | | |
| 50 | | S | 17 | 11-10-15-18 (16.0") | 25 | SP | S-17A (Top 6"): Similar to S-16A, except medium dense, grades into sandy gravel. S-17B (Bot. 10"): Sandy gravel, widely graded, angular to subangular platy to 1 1/2", 15-25% fine to coarse sand, 5-15% slightly plastic fines, medium dense, wet, gray to black; appears oily but may be organic fines. |
| -40 | | | | | | | |
| 55 | | | | | | | BOTTOM OF BORING AT 52 FEET |
| -45 | | | | | | | |
| 60 | | | | | | | |
| -50 | | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

| | |
|--|---|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 219.53 W 949.26 Groundwater Depth: Contractor: American Drilling | Logged by: A.C. Smith Date Start - Finish: 10/19/95 - 10/19/95 Ground Elevation: 12.089 ft Total Depth Drilled: 52 ft Rig Type: CME-75 Driller: R. Leger Depth to Bedrock: |
|--|---|

Methods: **Casing Used:** None

Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|----------------------|---|
| | | Type | No. | | | | |
| 12.1 | 0 | | | | | | |
| | 10 | S | 1 | 9-9-8-14 (22.0") | 17 | SM | S-1: Silty sand, uniform, fine, 5-15% nonplastic fines, medium dense, damp, light brown. |
| | 5 | S | 2 | 4-5-7-12 (24.0") | 12 | SM | S-2: Similar to S-1. |
| | 5 | S | 3 | 11-10-10-12 (24.0") | 20 | SM | S-3: Silty sand, uniform, fine, 35-50% nonplastic fines, uniform dense, moist, brown. |
| | | S | 4 | 6-12-15-16 (21.0") | 27 | SM SP-SM GW-GM | S-4A (Top 8"): Similar to S-3. S-4B (Mid. 4"): Sand, fine to medium, 5-10% nonplastic fines, medium dense, brown. S-4C (Bot. 9"): Sandy gravel, subrounded to subangular, to 1 1/2", 30-40% fine to coarse sand, 5-10% nonplastic fines, medium dense, brown. |
| | 10 | S | 5 | 8-11-14-17 (18.0") | 25 | SP-SM SW-SM | S-5A (Top 12"): Sand, fine to medium, 5-10% nonplastic fines, medium dense, brown. S-5B (Bot. 6"): Gravelly sand, widely graded, 10-20% subrounded gravel to 1 1/2", 5-15% nonplastic fines, medium dense, brown. |
| | 0 | S | 6 | 18-32-22-20 (15.0") | 54 | SW-SM | S-6: Similar to S-5B, except 20-30% gravel, very dense. |
| | 15 | S | 7 | 11-18-19-18 (17.0") | 37 | SW-SM | S-7: Similar to S-6, except dense. |
| | -5 | S | 8 | 14-14-18-29 (18.0") | 32 | SW-SM | S-8: Gravelly sand, widely graded, 20-30% subrounded gravel to 1 1/2", 10-20% nonplastic fines, dense, brown. |
| | 20 | S | 9 | 26-34-50-52 (18.0") | 84 | SW-SM | S-9: Gravelly sand, widely graded, 30-40% subrounded gravel to 1 1/2", 5-15% nonplastic fines, very dense, brown. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- ■ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
 S = Standard split-spoon

| | |
|------------------------|------------------|
| Approved DRB | Date 04/05/96 |
|------------------------|------------------|

Site: Fields Point, Providence, RI

Logged by: A.C. Smith

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|----------------|--|
| | | Type | No. | | | | |
| -10 | | | | | | | |
| | 25 | S | 10 | 15-18-17-19 (18.0°) | 35 | SW-SM ML-SP | S-10A (Top 3"): Similar to S-9, except medium dense. S-10B (Bot. 15"): Sandy silt, nonplastic to slightly plastic, 35-50% fine to coarse sand, mostly fine, medium dense, gray. |
| -15 | | | | | | | |
| | 30 | S | 11 | 15-25-21-25 (13.0°) | 46 | ML-SP SW | S-11A (Top 3"): Similar to S-10B, except dense. S-11B (Bot. 10"): Gravelly sand, well graded, 20-30% subrounded fine gravel, <5% nonplastic fines, dense, gray-brown. |
| -20 | | | | | | | |
| | 35 | S | 12 | 41-34-24-21 | 58 | GP-GM | S-12: Sandy gravel, subrounded to 1 1/2", 30-40% fine to coarse sand, 5-10% nonplastic fines, very dense, gray-brown. |
| -25 | | | | | | | |
| | 40 | S | 13 | 31-33-40-42 (15.0°) | 73 | SW | S-13: Gravelly sand, well-graded, 15-25% subrounded fine gravel, <5% nonplastic fines, very dense, gray-brown. |
| -30 | | | | | | | |
| | 45 | S | 14 | 15-25-41-43 (16.0°) | 66 | SW | S-14: Sand, well graded, 5-10% rounded fine gravel, <5% nonplastic fines, very dense, brown. |
| -35 | | | | | | | |
| | 50 | S | 15 | 31-40-47-41 (20.0°) | 87 | SW | S-15: Gravelly sand, well graded, 35-45% subrounded gravel to 1 1/2", <5% nonplastic fines, very dense, gray. |
| -40 | | | | | | | |
| | 55 | | | | | | |
| -45 | | | | | | | |
| | 60 | | | | | | |
| -50 | | | | | | | |

BOTTOM OF BORING AT 52 FEET

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

| | |
|-------------------------------------|--|
| Site: Fields Point, Providence, RI | Logged by: R.T. DeConto |
| Client: Algonquin LNG, Inc. | Date Start - Finish: 11/08/95 - 11/09/95 |
| Coordinates: N 90.04 W 1284.01 | Ground Elevation: 12.598 ft |
| Groundwater Depth: 9 ft | Depth to Bedrock: Total Depth Drilled: 52 ft |
| Contractor: American Drilling | Driller: R. Leger Rig Type: CME-75 |

Methods: Casing Used: None
 Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Comments: Groundwater depth as npted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|-----------|------------|--------|-----|-----------------------|-------------|----------------------|---|
| | | Type | No. | | | | |
| 12.6 | 0 | | | | | | Augered to 2'; Fill. |
| | 10 | S | 1 | 9-12-11-12 (22.0") | 23 | GP-GM | S-1: Sandy gravel, subrounded to 1 3/4", 20-30% fine to coarse sand, mostly fine, 5-10% nonplastic fines, medium dense, damp, black witholive mottling. |
| | 5 | S | 2 | 5-18-21-20 (20.0") | 39 | SP-SM | S-2: Gravelly sand, 15-25% subrounded gravel to 1 1/2", fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, moist, black and light brown; trace gravel size brick and coke fragments, slight hydrocarbon odor. |
| | 5 | S | 3 | 4-7-13-12 (10.0") | 20 | SP-SM ML SW-SM | S-3A (Top 4"): Similar to S-2, except medium dense, oily and strong hydrocarbon odor. S-3B (Mid. 2"): Sandy silt, slightly plastic, 10-30% fine sand, very stiff, moist, tan. S-3C (Bot. 4"): Gravelly sand, widely graded, 10-15% subrounded gravel to 1", fine to coarse sand, 10-15% slightly plastic fines, medium dense, moist, light brown. |
| | 10 | S | 4 | 8-10-12-12 (9.0") | 22 | SW-SM | S-4: Sand, widely graded, 5-10% subrounded gravel to 1", fine to coarse sand, 15-25% nonplastic fines (mostly in lenses), medium dense, saturated, light olive brown. |
| | 10 | S | 5 | 7-7-9-13 (15.0") | 16 | SM | S-5: Silty sand, uniform, fine, 10-20% nonplastic fines (mainly in lenses), medium dense, light olive. |
| | 0 | S | 6 | 12-13-14-13 (10.0") | 27 | SP | S-6: Sand, poorly graded, medium to coarse mostly medium, <5% nonplastic fines, medium dense, medium brown. |
| | 15 | S | 7 | 10-5-6-5 (16.0") | 11 | SP | S-7: Similar to above, except fine to coarse sand, medium gray brown. |
| | 15 | S | 8 | 7-9-10-9 | 19 | SP-SM | S-8: Sand, 5-10% flat rounded gravel to 1/2", fine to coarse sand, mostly medium, 5-10% nonplastic fines, medium dense, medium gray brown. |
| | -5 | | | | | | |
| | 20 | S | 9 | 3-6-9-7 (18.0") | 15 | SP-SM | S-9: Sand, 5-10% rounded gravel to 1", fine to coarse sand, mostly fine, 5-10% nonplastic fines, medium dense, medium brown. |

Legend/Notes

- Datum is NGVD 1929.
- ▽ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

· Sample Type:
S = Standard split-spoon

| | |
|-----------------|------------------|
| Approved DRB | Date 04/05/96 |
|-----------------|------------------|

Stone & Webster
Engineering Corporation

BORING LOG

Site: Fields Point, Providence, RI

Log

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Descript. |
|--------------|---------------|--------|-----|--------------------------------|-------------------|---------------|--|
| | | Type | No. | | | | |
| -10 | 25 | S | 10 | 3-6-9-11 (12.0") | 15 | SP-SM | S-10: Similar to S-9, except 2-5% gravel to 1/2", nonplastic fines in pockets. |
| -15 | 30 | S | 11 | 12-11-13- 14 (16.0") | 24 | SP SP-SM | S-11A (Top 6"): Sand, poorly graded, 2-5% gravel to 1/2", fine to medium sand, mostly medium, <5% nonplastic fines, medium dense, medium olive brown. S-11B (Bot. 10"): Sand, uniform, fine, 5-10% nonplastic fines, medium dense, medium olive brown. |
| -20 | 35 | S | 12 | 11-10-12- 14 (18.0") | 22 | SP | S-12: Sand, poorly graded, 2-5% rounded gravel to 1/2", fine to medium sand, mostly fine, <5% nonplastic fines, medium dense, medium gray brown, orange iron oxide banding through bottom 10" of sample. |
| -25 | 40 | S | 13 | 5-11-16-8 | 27 | | S-13: No recovery. |
| -30 | | S | 14 | 15-17-27- 32 (19.0") | 44 | SP-SM SP | S-14A (Top 9"): Sand, uniform, 10-15% slightly plastic fines (in lenses), dense, light olive brown with gray bands. S-14B (Bot. 10"): Gravelly sand, 20-30% subrounded gravel to 3/4", fine to coarse sand, mostly coarse, dense, olive with orange iron oxide. |
| -35 | 45 | S | 15 | 16-18-13- 21 | 31 | GW-GM | S-15: Sandy gravel, subrounded to 1 1/2", 35-45% fine to coarse sand, mostly fine (in lenses), 5-10% slightly plastic fines (in pockets), very dense, mottled (orange brown and olive). |
| -40 | 50 | S | 16 | 11-11-13- 14 (15.0") | 24 | SP ML | S-16A (Top 5"): Sand, uniform, fine, <5% nonplastic fines, medium dense, light yellow brown. S-16B (Bot. 10"): Silt, nonplastic, 5-10% fine sand, very stiff, light gray with occasional dark bands. |
| -45 | 55 | | | | | | BOTTOM OF BORING AT 52 FEET |
| -50 | 60 | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRB

Date
04/05/96

| | |
|--|---|
| Site: Fields Point, Providence, RI Client: Algonquin LNG, Inc. Coordinates: N 120.34 W 1366.47 Groundwater Depth: 6.5 ft Contractor: American Drilling | Logged by: R.T. DeConto Date Start - Finish: 11/08/95 - 11/08/95 Ground Elevation: 10.985 ft Total Depth Drilled: 52 ft Rig Type: CME-75 Depth to Bedrock: Driller: R. Leger |
|--|---|

Methods: Drilling Soil: 4.25" hollow-stem augers
 Sampling Soil: Standard split-spoon sampler driven using a CME automatic SPT hammer
 Drilling Rock: None

Casing Used: None

Comments: Groundwater depth as noted during drilling.

| Elev (ft) | Depth (ft) | Sample | | Blows or Recovery RQD | SPT N Value | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-------------------|-------------------|---|
| | | Type | No. | | | | |
| 11.0 | 0 | | | | | | Auger to 2' |
| | | | | | | | Fill: 10-20% gravel to 2". fine to coarse sand, 5-10% nonplastic fines, damp, light yellow, green staining. |
| | | S | 1 | 8-10-12-46 (9.0') | 22 | GP-GM | S-1: Sandy gravel, subangular to 1 3/8", 20-30% fine to coarse sand, 5-10% nonplastic fines, medium dense, damp, dark brown gravel and light yellow green sand. |
| | | S | 2 | 28-32-33-40 (22.0') | 65 | GP | S-2: Sandy gravel, poorly graded, subangular to 1 1/2", 10-20% fine to coarse sand, mostly medium, <5% nonplastic fines, very dense, dry, mottled (pink, yellow, brown, and green gray, due to chemical staining); gravel disintegrated. |
| | | S | 3 | 14-17-19-36 (15.0') | 36 | GP | S-3: Similar to above, except 30-40% sand, dense, saturated. |
| | | S | 4 | 18-22-28-35 (20.0') | 50 | SP-SM | S-4: Gravelly sand, 15-25% gravel to 1", fine to coarse sand, mostly fine, 5-10% slightly plastic fines, dense to very dense, mottled (yellow brown and tan). |
| | | S | 5 | 14-19-22-28 (18.0') | 41 | GP | S-5: Sandy gravel, poorly graded, subangular to 1 1/2", 10-20% fine to coarse sand, <5% nonplastic fines, dense, light brown. |
| | | S | 6 | 18-24-22-27 (16.0') | 46 | GP-GM | S-6: Sandy gravel, subangular to subrounded to 1 1/2", 20-30% fine to coarse sand, 5-10% slightly plastic fines in pockets, dense, mottled (light brown, yellow, taupe, and green (possible staining)). |
| | | S | 7 | 14-12-16-22 (6.0') | 28 | GP-GM | S-7: Similar to S-6, except medium dense. |
| | | S | 8 | 10-12-18-16 | 30 | SP | S-8: Sand, poorly graded, rounded, fine to coarse, mostly medium, <5% nonplastic fines, medium dense to dense, gray with black organic layers. |
| | | S | 9 | 17-14-19-24 (16.0') | 33 | SP GW-GM SP | S-9A (Top 4" and Lower Mid 2"): Sand, uniform, fine, <5% nonplastic fines, dense, gray brown. S-9B (Upper Mid. 9"): Sandy gravel, subangular to 1 3/4", 30-40% fine to coarse sand, mostly fine, 5-10% nonplastic fines, dense, light olive. |

Legend/Notes

- Datum is NGVD 1929.
- ∇ indicates groundwater level.
- █ indicates location of samples.
- Blows = number of blows required to drive 2" O.D. sample spoon 6" or distance shown using 140 pound hammer falling 30".
- () = inches of sample recovery.
- Recovery = % rock core recovery.
- RQD = Rock Quality Designation.
- SPT N = Standard Penetration Test resistance to driving, blows/ft.
- USC = Unified Soil Classification system.
- * indicates use of 300 pound hammer.

• Sample Type:
S = Standard split-spoon

| | |
|------------------------|------------------|
| Approved <i>DRS</i> | Date 04/05/96 |
|------------------------|------------------|

Site: Fields Point, Providence, RI

Logged by: R.T. DeConto

| Elev (ft) | depth (ft) | Sample | | Blows or Recovery RQD | SPT N V a l u e | USC Symbol | Sample Description |
|--------------|---------------|--------|-----|--------------------------------|-----------------------------------|---------------|--|
| | | Type | No. | | | | |
| | 25 | S | 10 | 18-25-24- 25 (15.0') | 49 | SW-SM SP | S-9C (Bot. 4"): Gravelly sand, poorly graded, 20-30% subrounded gravel to 3/4", fine to coarse sand, <5% nonplastic fines, dense, black. S-10A (Top 7"): Gravelly sand, widely graded, 25-35% subrounded gravel to 1 1/2", fine to coarse sand, 5-10% nonplastic fines, dense, light brown gray. S-10B (Bot. 8"): Sand, poorly graded, 5-10% rounded flat gravel to 1/2", fine to coarse sand, mostly fine, <5% nonplastic fines, dense, yellow brown. |
| -15 | 30 | S | 11 | 6-5-11-12 (17.0') | 16 | SP-SM | S-11A (Top 6"): Gravelly sand, 20-30% subangular to subrounded gravel to 3/4", fine to coarse sand, 5-10% slightly plastic fines, medium dense, light olive gray. S-11B (Bot. 11"): Sand, <5% gravel to 3/4", fine to medium sand, mostly fine, 5-15% slightly plastic fines (in lenses), medium dense, light brown. |
| -20 | 35 | S | 12 | 14-10-11- 16 (18.0') | 21 | SP SP-SM | S-12A (Top 8"): Sand, poorly graded, fine to coarse, mostly fine, <5% nonplastic fines, medium dense, medium olive; 2" layer of mostly coarse sand. S-12B (Bot. 10"): Sand, uniform, fine, 10-15% nonplastic fines, medium dense, light olive brown. |
| -25 | 40 | S | 13 | 8-10-12- 12 (16.0') | 22 | SP | S-13: Sand, uniform, fine to medium, mostly medium, <5% nonplastic fines, medium dense, medium olive. |
| -30 | 45 | S | 14 | 8-7-7-10 (15.0') | 14 | SP | S-14: Similar to S-13; 2" layer of mostly coarse sand. |
| -35 | 50 | S | 15 | 8-13-17- 21 (21.0') | 30 | | S-15A (Top 8"): Similar to S-13. S-15B (Bot. 13"): Sand, uniform, fine, 5-10% nonplastic fines, medium dense to dense, medium light brown olive. |
| -40 | 55 | | | | | | BOTTOM OF BORING AT 52 FEET |
| -45 | 60 | | | | | | |
| -50 | | | | | | | |

Note: See Sheet 1 for Boring Summary and Legend Information

Approved
DRS

Date
04/05/96

| | |
|---|---|
| BORING CO. <u>Guild</u> F:EMAN <u>Tom Paquette, John Medeiros</u> GZA ENG. <u>Dan Oaks and Joanne Kissinger</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>±11'</u> DATUM <u>MLLW</u> DATE START <u>4/30/04</u> DATE END <u>5/05/04</u> |
|---|---|

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF
 A SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb
 HAMMER FALLING 24 IN.

CASING SIZE: 5" OTHER:

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | REMARKS | STRATUM DESCRIPTION |
|-------|--------------|--------|---------|------------|----------|---|---------|---------------------|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | S-1 | 24/20 | 0-2 | 5-6 | Loose, black/brown, fine to coarse (-) SAND, little Silt, trace | 1 | GRANULAR FILL |
| | | | | | 4-8 | Gravel (Coal) | | |
| | | S-2 | 24/20 | 2-4 | 5-5 | Medium dense, tan, fine (+) to medium SAND, trace fine Gravel, | | |
| | | | | | 8-6 | trace Silt | | |
| | | S-3 | 24/10 | 4-6 | 11-5 | Loose, brown, fine (+) to medium SAND, trace Silt | | |
| | | | | | 4-5 | | | |
| | | S-4 | 24/8 | 6-8 | 5-3 | Loose, brown, fine (+) to medium SAND, trace Silt | | |
| | | | | | 3-1 | | | |
| | | S-5 | 24/8 | 8-10 | 3-1 | Very loose, brown, fine to medium SAND, little Silt | | |
| | | | | | 1-2 | | | |
| 15 | | S-6 | 24/ | 14-16 | 7-4 | Medium dense, tan, fine to coarse (-) SAND, little Silt, trace | 1 | GRANULAR FILL |
| | | | | | 6-8 | fine Gravel | | |
| | | | | | | | | |
| | | | | | | | | |
| 22 | | S-7 | 24/10 | 19-21 | 9-6 | Medium dense, gray/brown, fine to coarse SAND, little fine to | 1 | GRANULAR FILL |
| | | | | | 4-5 | coarse Gravel, little Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| 27 | | S-8 | 24/12 | 24-26 | 3-3 | Loose, gray, fine to coarse SAND, little fine to coarse Gravel, | 1 | GRANULAR FILL |
| | | | | | 3-2 | trace Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| 30 | | S-9 | 24/11 | 29-31 | 6-5 | Medium dense, gray, fine to coarse SAND, little fine to coarse | 1 | GRANULAR FILL |
| | | | | | 7-5 | Gravel, trace Silt | | |
| | | | | | | | | |
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|------------------------------------|------------------------------------|--|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 1. Groundwater encountered at ±8'. |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|---------|------------|----------|--|------------------|---------------------|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | |
| 30 | | S-10 | 24/11 | 34-36 | 9-8 | Medium dense, gray, fine to coarse SAND, little fine to coarse | ±39' | GRANULAR FILL |
| | | | | | 9-12 | Gravel, trace Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| | | S-11 | 24/14 | 39-41 | 10-16 | Medium dense, gray, fine to coarse SAND, little fine to coarse | | |
| | | | | | 10-12 | Gravel, trace Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 45 | | S-12 | 24/17 | 44-46 | 13-8 | Medium dense, gray, fine to medium SAND, some Silt, little | OUTWASH DEPOSITS | |
| | | | | | 13-24 | fine to coarse Gravel | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| 60 | | S-13 | 24/21 | 49-51 | 25-26 | Very dense, gray and black, fine to medium SAND, some Silt | OUTWASH DEPOSITS | |
| | | | | | 27-28 | (Shale) | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| 60 | | S-14 | 24/18 | 54-56 | 17-18 | (Top): Dense, brown, black, fine to coarse (-) SAND, | OUTWASH DEPOSITS | |
| | | | | | 24-28 | some Silt | | |
| | | | | | | (Bottom): Very dense, brown, fine to medium SAND, little Silt | | |
| | | | | | | | | |
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| | | | | | | | | |
| 60 | | S-15 | 24/21 | 59-61 | 22-25 | Dense, olive, fine SAND and SILT | OUTWASH DEPOSITS | |
| | | | | | 24-34 | | | |
| | | | | | | | | |
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| | | | | | | | | |
| 60 | | S-16 | 24/17 | 64-66 | 21-21 | Dense, olive, fine to coarse SAND, some fine to coarse Gravel, | OUTWASH DEPOSITS | |
| | | | | | 21-16 | little Silt | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| 70 | | S-17 | 24/15 | 69-71 | 17-19 | Dense, gray, fine to coarse (-) SAND, trace Silt | OUTWASH DEPOSITS | |
| | | | | | 21-16 | | | |
| | | | | | | | | |
| | | | | | | | | |
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|--------------------|------------------|---------------------------------------|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 2. Switched to 3" casing at ±65 feet. |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES:

- 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
- 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DFPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | | S-18 | 24/16 | 74-76 | 15-14 | Medium dense, gray, fine to coarse SAND, trace Silt | | OUTWASH DEPOSITS |
| | | | | | 13-16 | little Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| 80 | | S-19 | 24/14 | 79-81 | 18-17 | Dense, gray, fine to coarse SAND, trace Silt | | |
| | | | | | 30-43 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 85 | | S-20 | 24/12 | 84-86 | 24-28 | Very dense, gray GRAVEL and fine to coarse Sand, some Silt | | |
| | | | | | 24-21 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 90 | | S-21 | 24/17 | 89-91 | 38-16 | Medium dense, gray GRAVEL and fine (+) to coarse Sand, | | |
| | | | | | 8-12 | trace Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| 95 | | S-22 | 24/10 | 94-96 | 13-10 | Medium dense, gray, fine SAND, trace Silt | | |
| | | | | | 12-11 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 100 | | S-23 | 24/6 | 99-101 | 10-8 | Medium dense, gray, fine SAND, trace Silt | | |
| | | | | | 9-12 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 104 | | S-24 | 24/9 | 104-106 | 38-32 | Dense, gray, fine to coarse (-) SAND, some fine Gravel, little (+) | ±104' | |
| | | | | | 21-14 | Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| 110 | | S-25 | 24/3 | 109-111 | 21-37 | Very dense, gray GRAVEL, and fine to coarse Sand, little Silt | | |
| | | | | | 20-20 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 115 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | |
|------------------------------------|--------------|------------------------------------|-----------|
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

REMARKS:

NO S: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 115 | | S-26 | 24/20 | 114-116 | 58-62 | (Top 10"): Very dense, gray, fine to medium SAND, trace Silt | | GLACIAL TILL |
| | | | | | 67-95 | (Bottom 10"): Very dense, gray, fine to coarse (-) SAND, some Silt | | |
| | | | | | | | | |
| | | | | | | | | |
| | | S-27 | 24/18 | 119-121 | 43-41 | Very dense, gray, fine (+) to coarse SAND, and fine to coarse | | |
| | | | | | 40-51 | Gravel, some Silt | | |
| | | | | | | End of Exploration at ±121' | | |
| 125 | | | | | | | | |
| 130 | | | | | | | | |
| 140 | | | | | | | | |
| 145 | | | | | | | | |
| 155 | | | | | | | | |

| | | | |
|-------|------------------------------------|------------------------------------|-----------|
| | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

BORING NO. GZ-1

| PTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-----|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | | S-16 | 24/14 | 35-37 | 22-24 | Dense, gray SILT, some medium to coarse Sand, trace fine to coarse Gravel | | |
| | | | | | 23-26 | | | |
| | | S-17 | 24/5 | 40-42 | 11-14 | Medium dense, gray, coarse SAND and coarse GRAVEL | | |
| | | | | | 16-7 | | | |
| | | S-18 | 24/16 | 45-47 | 11-7 | Medium dense, coarse SAND and coarse Gravel | | |
| | | | | | 7-8 | | | |
| 50 | | S-19 | 24/9 | 50-52 | 24-18 | Dense, brown, coarse SAND and coarse GRAVEL | | |
| | | | | | 18-11 | | | |
| | | S-20 | 24/10 | 55-57 | 24-25 | Very dense, tan SILT and medium to coarse SAND, little fine Gravel | | OUTWASH DEPOSITS |
| | | | | | 27-20 | | | |
| 60 | | S-21 | 1/1 | 60-62 | 100/1" | Tan, to light gray, coarse SAND and coarse GRAVEL | | |
| | | | | | | | | |
| 65 | | S-22 | 24/8 | 65-67 | 17-29 | Dense, gray, fine to coarse SAND, some fine Gravel, little Silt | | |
| | | | | | 19-11 | | | |
| 7 | | S-23 | 24/14 | 70-72 | 24-10 | Medium dense, gray SILTY SAND, little fine Gravel | | |
| | | | | | 18-24 | | | |

| | | | | |
|------------------------------------|------------------------------------|----------|-------|-----------|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: | | |
| 0-4 | VERY LOOSE | | <2 | VERY SOFT |
| 4-10 | LOOSE | | 2-4 | SOFT |
| 10-30 | MEDIUM DENSE | | 4-8 | M. STIFF |
| 30-50 | DENSE | | 8-15 | STIFF |
| >50 | VERY DENSE | | 15-30 | V. STIFF |
| | | >30 | HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------|--------|-------|-----------|--------------------|---|--------|------------------------|
| | | BLOWS | NO | PEN./REC | DEPTH (FT) | | | |
| 75 | | S-24 | 24/4 | 75-77 | 9-10 9-8 | Medium dense, gray, fine to coarse GRAVEL, trace fine Sand, trace Silt | | OUTWASH DEPOSITS |
| 80 | | S-25 | 24/7 | 80-82 | 22-15 10-22 | Medium dense, gray, fine to coarse GRAVEL, trace Silt | | |
| 85 | | S-26 | 24/12 | 85-87 | 16-60 26-44 | Very dense, gray SILT, little fine Gravel | | GLACIAL TILL |
| 90 | | S-27 | 1/0 | 90-92 | 100/1" | NO RECOVERY | | |
| 95 | | S-28 | 5/5 | 95-97 | 100/5" | Very dense, gray, fine to coarse GRAVEL, trace Clay | | |
| 100 | | S-29 | 23/18 | 100-102 | 68-61 92-100/5" | Very dense, gray, CLAYEY SAND, some fine to coarse Gravel, trace Silt | | |
| 105 | | S-30 | 9/6 | 105-105.8 | 55-100/3" | Very dense, gray, fine to coarse (-) SAND, some Silt, little fine Gravel | | |
| 110 | | S-31 | 24/15 | 110-112 | 27-87 75-79 | Very dense, gray GRAVEL, and fine to coarse Sand, some Silt | | |
| 115 | | | | | | | | |

| | | | |
|-------|------------------------------------|------------------------------------|-----------|
| | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-1 | LOOSE | 2-4 | SOFT |
| 10-3 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DI | FH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-----|----|-----------------|--------|----------|------------|---------------|--|--------|------------------------|
| | | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 115 | | | S-32 | 9/7 | 115-115.8 | 81-100/3" | Very dense, gray, fine to coarse SAND, some Silt, trace fine Gravel | 3 | GLACIAL TILL |
| 12' | | | S-33 | 24/10 | 120-122 | 9-13 24-29 | Dense, gray, fine to coarse SAND, some Silt, trace fine Gravel | | |
| 12' | | | | | | | End of Exploration at ±122' | | |
| 130 | | | | | | | | | |
| 13' | | | | | | | | | |
| 140 | | | | | | | | | |
| 145 | | | | | | | | | |
| 150 | | | | | | | | | |
| 155 | | | | | | | | | |

| | | | |
|------------------------------------|------------------------------------|--|----------------------------------|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: 3. 300# hammer used. |
| 0-4 VERY LOOSE | <2 VERY SOFT | | |
| 4- LOOSE | 2-4 SOFT | | |
| 10- MEDIUM DENSE | 4-8 M. STIFF | | |
| 30-50 DENSE | 8-15 STIFF | | |
| >50 VERY DENSE | 15-30 V. STIFF | | |
| | >30 HARD | | |

NO S: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER
MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|----------------------|--------|
| GZA GEOENVIRONMENTAL INC. 100 BROADWAY, PROVIDENCE, RHODE ISLAND GEOLOGICAL/GEOTECHNICAL CONSULTANTS GEO TECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-3 |
| | KeySpan LNG Terminal | SHEET | 1 of 3 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| | | | |
|--------------|------------------|-----------------|-------------------------------|
| DRILLING CO. | Geologic | BORING LOCATION | See Exploration Location Plan |
| OPERATOR | Tim Tucker | MUDLINE ELEV. | -28.2' |
| ENGINEER | Joanne Kissinger | DATUM | MLLW |
| | | DATE START | 4/6/04 |
| | | DATE END | 4/6/04 |

| | | | | | |
|--|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASSING SIZE: OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|-----------|------------|----------|---|--------|------------------------|
| | | NO | PENI./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | S-1 | 24/4 | 0-2 | W.O.R. | Black, very soft, organic SILT | | ORGANIC SILT |
| | | S-2 | 24/2 | 2-4 | W.O.R. | Very soft, black, Organic SILT | | |
| | | S-3 | 24/24 | 4-6 | W.O.R. | Very soft, black, organic SILT | 1 | |
| | | S-4 | 24/24 | 6-8 | W.O.R. | Very soft, black, Organic SILT | 2 | |
| 40 | | | | | | | | |
| 40 | S-5 | 24/15 | | 8-10 | 1/12" | Very soft, black, Organic SILT, little medium to coarse Sand | | |
| 30 | | | | | 3-8 | | | |
| 25 | S-6 | 24/15 | | 10-12 | 8-7 | (Top 3"): Soft, black, Organic SILT, little fine to medium Sand | ±10' | OUTWASH DEPOSITS |
| 25 | | | | | 9-12 | (Bottom 12"): Very stiff, tan SILT | | |
| 25 | S-7 | 24/7 | | 12-14 | 9-12 | (Top 1"): Soft, gray SILT | | |
| 25 | | | | | 16-19 | (Bottom 6"): Very stiff, tan SILT, fine Sand and Silt | | |
| 25 | S-8 | 24/8 | | 14-16 | 9-23 | (Top 2"): Dense, black, fine to medium SAND and SILT, little fine Gravel | | |
| 28 | | | | | 42-32 | (Bot. 6"): Dense, tan, fine to coarse SAND, some Silt, little fine Gravel | | |
| 45 | S-9 | 24/10 | | 16-18 | 30-44 | Very dense, tan, fine to medium SAND, some Silt, little fine to coarse | | |
| 50 | | | | | 38-34 | Gravel | | |
| 70 | S-10 | 24/6 | | 18-20 | 19-39 | Very dense, olive, fine to medium SAND, some Silt, little fine Gravel | | |
| 75 | | | | | 25-17 | | | |
| 68 | S-11 | 24/3 | | 20-22 | 14-16 | Medium dense, olive, fine to coarse SAND, little fine Gravel, | | |
| 65 | | | | | 8-10 | trace Silt | | |
| 65 | S-12 | 24/12 | | 22-24 | 10-38 | Very dense, olive, fine to medium SAND, fine Gravel, little Silt | | |
| 65 | | | | | | | | |
| 65 | S-13 | 24/5 | | 24-26 | 23-22 | Very dense, olive, fine to medium SAND, little fine Gravel, | | |
| 65 | | | | | 38-25 | little Silt | | |
| 65 | S-14 | 24/12 | | 26-28 | 38-30 | Very dense, olive, fine to coarse SAND, little fine Gravel, little | | |
| 65 | | | | | 27-25 | Silt | | |
| 65 | S-15 | 24/4 | | 28-30 | 14-37 | Very dense, olive, fine to medium SAND, some Silt, little fine Gravel | | |
| 30 | 65 | | | | 32-45 | | | |
| | 52 | | | | | | | |
| | 52 | | | | | | | |
| | 53 | | | | | | | |
| | 51 | | | | | | | |

| | | |
|------------------------------------|------------------------------------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Petroleum-type odor. |
| 0 LOOSE | 2-4 SOFT | 2. Petroleum-type odor. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Possible boulders encountered (nested boulders). |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 4 | | S-16 | 24/15 | 40-42 | 12-9 | Medium dense, gray, fine to medium SAND, little Silt | 5 | |
| | | | | | 10-13 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 45 | | | | | | | 6 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 50 | | S-17 | 24/5 | 50-52 | 26-17 | Dense, fine to coarse (-) SAND, some fine Gravel, trace Silt | 7 | |
| | | | | | 21-25 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 5 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 60 | | S-18 | 24/8 | 60-62 | 23-12 | Medium dense, gray, fine to coarse SAND, little fine Gravel, | 8 | |
| | | | | | 9-10 | little Silt | 9 | |
| | | | | | | | | |
| | | | | | | | | |
| 65 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 71 | | S-19 | 24/14 | 70-72 | 6-7 | Medium dense, gray, fine to medium SAND, trace Silt | | |
| | | | | | 10-12 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 75 | | | | | | | | |

| | | |
|-------------------------|-------------------------|---|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 4. Rollerbit ahead from 35' to 40'. |
| 4-10 LOOSE | 2-4 SOFT | 5. Rollerbit ahead to 50'. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 6. Possible boulders encountered. Water added to drilling tub (losing water ±49') (mud added) |
| 30-50 DENSE | 8-15 STIFF | 7. Rollerbit ahead to 60'. Nested boulders 53' to 60'. |
| >50 VERY DENSE | 15-30 V. STIFF | 8. Mud added to tub 58' of water. Attempt S-18 but rods wouldn't go down by ±20' (possible boulder) |
| | >30 HARD | fill into hole or hole collapsed). Drillers will clean out and install 4" casing tomorrow morning. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 80 | | S-20 | 18/18 | 80-81.5 | 6-31 | Very dense, gray, fine to medium SAND, trace Silt | 10 | OUTWASH DEPOSITS |
| | | | | | 123/6" | | 11 | |
| | | | | | | | 12 | |
| | | | | | | | | |
| 85 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 90 | | S-21 | 24/21 | 90-92 | 47-38 | Very dense, gray, fine to coarse SAND, little Silt, trace fine | | |
| | | | | | 34-41 | Gravel | ±90' | |
| | | | | | | | 13 | |
| | | | | | | | | |
| 95 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 100 | | S-22 | 24/12 | 100-102 | 46-39 | Very dense, gray, fine to coarse SAND, some fine to coarse Gravel, some Silt | 14 | GLACIAL TILL |
| | | | | | 56-60 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 105 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 110 | | S-23 | 24/15 | 110-112 | 89-52 | Very dense, gray, fine to medium SAND, some Silt, trace fine | | |
| | | | | | 55-55 | Gravel | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 115 | | | | | | End of Exploration at ±112' | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | 10. Possible boulder encountered while driving casing. Wash ahead from approximately 77' to 80'. |
| 4-10 LOOSE | 2-4 SOFT | 11. Sand blew up into rods, after 5-20 collected and began to wash ahead. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 12. 4-9-04 finish cleaning blown in sands and wash ahead to 85' casing installed to 85'. Boulders encountered. |
| 30-50 DENSE | 8-15 STIFF | 13. Rollerbit ahead and wash out to 100'. |
| >50 VERY DENSE | 15-30 V. STIFF | 14. After S-22 casing driven to 95'. Rollerbit ahead. Losing water at 105' during washout. Tough drilling at 108'. Drive casing to 103'. |
| | >30 HARD | |

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|--|--------------------------|-----------------------|--------|
| G7A GEOENVIRONMENTAL INC. 11 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO.: | GZ-5 |
| | KeySpan LNG Terminal: | SHEET | 1 of 4 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| | | | |
|------------------|------------------|------------------|-------------------------------|
| ENGINEERING CO.: | Geologic | BORING LOCATION: | See Exploration Location Plan |
| FIELD MAN: | Tim Tucker | MUDLINE ELEV.: | -10.3' |
| GEOTECH. ENG.: | Joanne Kissinger | DATE START: | 3/24/04 |
| | | DATE END: | 3/24/04 |

| | | | | | |
|--|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 5" OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | REMARKS | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|-----------|---|--------------|---|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | S-1 | 24/15 | 0-2 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter | ORGANIC SILT | |
| | | S-2 | 24/24 | 2-4 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter | | |
| | | S-3 | 24/12 | 4-6 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter | | |
| | | S-4 | 24/18 | 6-8 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter | | |
| | 1 | 7 | S-5 | 24/18 | 8-10 | W.O.R. | | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter, trace Shells |
| | | 7 | S-6 | 24/12 | 10-12 | W.O.R. | | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter, no Shells |
| | | 8 | | | | | | |
| | 15 | 8 | S-7 | 24/12 | 12-14 | W.O.R. | | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter, trace Fiber |
| | | 7 | S-8 | 24/12 | 14-16 | W.O.R. | | (Top 4"): Very soft, black, fine SAND, little Silt (Bottom 8"): Very soft, black, Organic SILT, trace Organics, trace Shells |
| | | 7 | S-9 | 24/12 | 16-18 | W.O.R. | | Very soft, black, Organic SILT, trace fine Sand, trace organic Matter, trace Shells |
| 12 | | S-10 | 24/20 | 18-20 | W.O.R. | (Top 4"): Very soft, black, fine SAND, little Silt (Bottom 8"): Very soft, black, Organic SILT, trace Organics, trace Shells | | |
| 18 | | | | | | | | |
| 2 | 20 | S-11 | 24/12 | 20-22 | W.O.R. | Very soft, black, Organic SILT, trace fine Sand, trace Organic Matter, trace Shells | | |
| | 28 | | | | | | | |
| | 35 | S-12 | 24/18 | 22-24 | W.O.R. | Very soft, black, Organic SILT, trace organic Matter, trace Shells | | |
| | 37 | | | | | | | |
| 20 | 42 | S-13 | 24/24 | 24-26 | W.O.R. | Very soft, black, Organic SILT, trace Organics, trace Shells | | |
| | 45 | | | | | | | |
| | 53 | S-14 | 24/18 | 26-28 | WOR-13 | (Top 12"): Medium dense, dark gray, fine SAND and Organic SILT, trace Wood Chip | | |
| | 56 | | | | 8-5 | | | |
| | 58 | S-15 | 21/21 | 28-29.8 | 3-16 | (Bottom 6"): Medium dense, dark gray, fine to coarse Organic SAND and Organic SILT | | |
| | 50 | | | | 95-100/3" | | | |
| | 57 | | | | | S-15: Very dense, dark gray, organic, fine to coarse SAND, some Silt, some fine Gravel | | |

| | | |
|------------------------------------|------------------------------------|----------------------------------|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Possible boulder encountered. |
| 5-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|----------------------|--------|
| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEO TECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. | GZ-5 |
| | KeySpan LNG Terminal | SHEET | 2 of 4 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | 52 | S-16 | 24/4 | 35-37 | 26-24 | Dense, dark gray, fine to coarse SAND, organic, little Silt, trace fine Gravel | 2 | OUTWASH DEPOSITS |
| | 65 | | | | 19-20 | | | |
| | 68 | | | | | | | |
| | 72 | | | | | | | |
| | 63 | | | | | | | |
| | 58 | S-17 | 24/6 | 40-42 | 19-18 | Dense, dark gray, fine (+) to coarse (-) SAND, some Silt, some fine Gravel | | |
| | 55 | | | | 18-14 | | | |
| | 73 | | | | | | | |
| | 74 | | | | | | | |
| 45 | 65 | | | | | | | |
| | 61 | S-18 | 24/4 | 45-47 | 13-20 | Dense, dark gray, fine to medium SAND, trace Silt, trace fine Gravel | | |
| | 68 | | | | 25-40 | | | |
| | 70 | | | | | | | |
| | 76 | | | | | | | |
| | 75 | | | | | | | |
| | 101 | S-19 | 24/6 | 50-52 | 26-16 | Medium dense, dark gray, fine to medium Gravel, little fine to coarse, trace Silt | | |
| | 117 | | | | 7-4 | | | |
| | 147 | | | | | | | |
| | 124 | | | | | | | |
| | 102 | | | | | | | |
| | 101 | S-20 | 24/9 | 55-57 | 16-20 | Dense, dark gray, fine to medium GRAVEL/SHALE, some fine to coarse Sand, trace Silt | | |
| | 95 | | | | 22-21 | | | |
| | 114 | | | | | | | |
| | 142 | | | | | | | |
| 60 | 112 | | | | | | | |
| | 61 | S-21 | 24/10 | 60-62 | 31-17 | Dense, gray, fine to coarse SAND and GRAVEL, little Silt | | |
| | 200 | | | | 14-17 | | | |
| | 210 | | | | | | | |
| | 220 | | | | | | | |
| | 230 | | | | | | | |
| | 30 | S-22 | 24/7 | 65-67 | 24-16 | Dense, gray, fine to coarse SAND and GRAVEL, trace Silt | | |
| | 30 | | | | 22-28 | | | |
| | 30 | | | | | | | |
| | 30 | | | | | | | |
| | 90 | | | | | | | |
| | 90 | S-23 | 24/0 | 70-72 | 60-28 | NO RECOVERY | | |
| | 90 | | | | | | | |
| | 90 | | | | | | | |
| 75 | 110 | | | | | | | |

| <table border="1"> <tr> <th>GRANULAR SOILS BLOWS/FT DENSITY</th> <th>COHESIVE SOILS BLOWS/FT DENSITY</th> </tr> <tr> <td>0-4 VERY LOOSE</td> <td><2 VERY SOFT</td> </tr> <tr> <td>4-10 LOOSE</td> <td>2-4 SOFT</td> </tr> <tr> <td>30 MEDIUM DENSE</td> <td>4-8 M. STIFF</td> </tr> <tr> <td>50 DENSE</td> <td>8-15 STIFF</td> </tr> <tr> <td>>50 VERY DENSE</td> <td>15-30 V. STIFF</td> </tr> <tr> <td></td> <td>>30 HARD</td> </tr> </table> | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | 0-4 VERY LOOSE | <2 VERY SOFT | 4-10 LOOSE | 2-4 SOFT | 30 MEDIUM DENSE | 4-8 M. STIFF | 50 DENSE | 8-15 STIFF | >50 VERY DENSE | 15-30 V. STIFF | | >30 HARD | REMARKS: 2. Possible Cobbles encountered. 3. Switch to 4" casing. |
|--|------------------------------------|------------------------------------|----------------|--------------|------------|----------|-----------------|--------------|----------|------------|----------------|----------------|--|----------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | | | | | | | | | | | | | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | | | | | | | | | | | | | | |
| 4-10 LOOSE | 2-4 SOFT | | | | | | | | | | | | | | |
| 30 MEDIUM DENSE | 4-8 M. STIFF | | | | | | | | | | | | | | |
| 50 DENSE | 8-15 STIFF | | | | | | | | | | | | | | |
| >50 VERY DENSE | 15-30 V. STIFF | | | | | | | | | | | | | | |
| | >30 HARD | | | | | | | | | | | | | | |

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| PTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-----|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | 110 | S-24 | 24/2 | 75-77 | 24-16 | Dense, gray, fine to medium SAND, some Silt, little fine Gravel | 4 | |
| | 110 | | | | | | | |
| | 110 | | | | | | | |
| | 110 | | | | | | | |
| | 110 | | | | | | | |
| | 110 | | | | | | | |
| 80 | 40 | S-25 | 24/7 | 80-82 | 16/2-27 | Dense, gray, fine to medium SAND, some Silt, little fine Gravel | 5 | |
| | 40 | | | | 23-21 | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| 90 | 40 | S-26 | 24/6 | 85-87 | 64-21 | Dense, gray, fine (+) to coarse (-) SAND, some Silt, little fine angular Gravel | 6 | |
| | 40 | | | | 20-20 | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| | 40 | | | | | | | |
| 95 | 40 | S-27 | 24/0 | 90-92 | 34-25 | NO RECOVERY | 7 | |
| | 45 | | | | 19-11 | | | |
| | 48 | | | | | | | |
| | 67 | | | | | | | |
| | 72 | | | | | | | |
| | 78 | S-28 | 24/24 | 95-97 | 6-8 | | | |
| 100 | 84 | | | | 13-26 | Medium dense, gray, fine to medium SAND, trace Silt | 8 | |
| | 85 | | | | | | | |
| | 107 | | | | | | | |
| | 240 | | | | | | | |
| | 316 | S-29 | 24/18 | 100-102 | 12-18 | | | |
| | 351 | | | | 21-24 | | | |
| 105 | 355 | | | | | Medium dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | 9 | |
| | 367 | | | | | | | |
| | 370 | | | | | | | |
| | 375 | S-30 | 24/12 | 105-107 | 35-28 | | | |
| | 381 | | | | 37-38 | | | |
| | 385 | | | | | | | |
| 110 | 382 | | | | | Very dense, gray, fine to medium SAND, little Silt | 6 | |
| | 389 | | | | | | | |
| | 20 | S-31 | 24/3 | 110-112 | 40-9 | | | |
| | 20 | | | | 9-13 | | | |
| | 20 | | | | | | | |
| | 20 | | | | | | | |
| 115 | 20 | | | | | Medium dense, gray, fine to coarse (-) SAND and angular fine to coarse GRAVEL, trace Silt | 7 | |
| | 20 | | | | | | | |

OUTWASH
DEPOSITS

| | | | | |
|------------------------------------|--------------|------------------------------------|-----------|--|
| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | 4. 100 Blows for 4" with 140# hammer. Switch to 300# hammer (S-25). |
| 4-10 | LOOSE | 2-4 | SOFT | 5. Weathered rock? |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | 6. Casing blow counts high, probably friction. Fine to medium sand observed in wash. |
| 30-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|-----------------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 115 | | S-32 | 24/8 | 115-117 | 20-7 12-18 | Medium dense, gray, fine to medium SAND, trace Silt, trace fine Gravel | 10 | OUTWASH DEPOSITS |
| 120 | | S-33 | 9/8 | 120-122 | 38-100/3" | Very dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | ±120' | GLACIAL TILL |
| 125 | | S-34 | 15/8 | 125-126.2 | 57-70 100/3" | Very dense, gray, fine to medium SAND, little fine Gravel, trace Silt | | |
| | | | | | | End of Exploration at ±126.2' | | |
| 130 | | | | | | | | |
| 135 | | | | | | | | |
| 140 | | | | | | | | |
| 145 | | | | | | | | |
| 150 | | | | | | | | |
| 155 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | |
|------------------------------------|--------------|------------------------------------|-----------|
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

REMARKS:
 7. Use mud to keep hole open after S-32.
 8. Sand blew into casing approximately ±8'.
 9. Drillers removed 5" casing and installed 3" casing, mud added.
 10. Possible boulder encountered, difficult drilling.

NOTES:
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 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| GEOENVIRONMENTAL INC. | | PROJECT | | REPORT OF BORING NO. | | | | |
|---|--------------|--|-----------|--|----------|---|------|---------------------|
| 140 BROADWAY, PROVIDENCE, RHODE ISLAND | | KeySpan LNG Terminal | | GZ-7 (C) | | | | |
| GEOTECH/GEOHYDROLOGICAL CONSULTANTS | | Providence, Rhode Island | | SHEET 1 of 5 | | | | |
| GEOTECHNICAL BORING LOG | | | | FILE NO. 32784 | | | | |
| | | | | CHKD BY: DMA | | | | |
| BORING CO. <u>Guild</u> | | BORING LOCATION <u>See Exploration Location Plan</u> | | | | | | |
| FOREMAN <u>Tom Paquette, John Medeiros</u> | | GROUND SURFACE ELEV. <u>±14'</u> | | DATUM <u>MLLW</u> | | | | |
| GZA ENG. <u>Joanne Kissinger</u> | | DATE START <u>4/19/04</u> | | DATE END <u>4/24/04</u> | | | | |
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | | GROUNDWATER READINGS | | | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | | DATE | TIME | WATER | CASING | | | |
| CASING SIZE: <u>5" / 4"</u> OTHER: | | 4/24/04 | | ±11' | | | | |
| | | | | | | | | |
| | | | | | | | | |
| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION | R | STRATUM DESCRIPTION |
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | BURMISTER CLASSIFICATION | K | |
| 5 | S | | | | | | 1 | GRANULAR FILL |
| | S | | | | | | 2 | |
| | S | | | | | | 3 | |
| | P | | | | | | 4 | |
| | P | | | | | | | |
| 10 | S | S-5 | 24/2 | 8-10 | 4-1 | Loose, gray, fine to coarse (-) SAND, little Silt (wet) | | |
| | S | | | | 3-5 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 15 | S | S-6 | 24/0 | 14-16 | 19-18 | NO RECOVERY | | |
| | S | | | | 15-14 | | | |
| | S | S-7 | 24/4 | 16-18 | PUSH | Loose, black, fine to medium SAND, trace Silt (wet) | 5 | |
| | S | | | | | | | |
| | S | | | | | | | |
| 20 | 78 | S-8 | 24/6 | 19-21 | 20-8 | Medium dense, dark brown, FIBROUS WOOD, trace medium | ±19' | |
| | 68 | | | | 5-5 | Sand (wet) | | |
| | 33 | | | | | | | |
| | 32 | | | | | | | |
| | 46 | | | | | | | |
| 29 | | S-9A | 24/0 | 24-26 | 15-3 | NO RECOVERY | | |
| | | | | | 1-2 | | | |
| | | S-9B | 24/15 | 24-26 | PUSH | Very soft, gray, Organic SILT, trace Organics, Fibers, Shells | 6 | |
| | | | | | | | | |
| | | | | | | | | |
| | | UP-1 | 24/0 | 27-29 | | UNDISTURBED PISTON SAMPLE (NO RECOVERY) | 7 | |
| | | | | | | | 8 | |
| | | S-10A | 24/0 | 29-31 | 2-4 | NO RECOVERY | | |
| | | | | | 2-2 | | | |
| | | S-10B | 24/20 | 29-31 | PUSH | Very soft, gray, Organic SILT, trace Organics, Wood fibers | 9 | |
| GRANULAR SOILS | | COHESIVE SOILS | | REMARKS: | | | | |
| BLOWS/FT DENSITY | | BLOWS/FT DENSITY | | 1. Casing spun (s) or pushed (p). | | | | |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | 2. Samples S-1 through S-4 collected in boring GZ-7 (B). | | | | |
| 4-10 | LOOSE | 2-4 | SOFT | 3. Rollerbit from 0-8'. (Rollerbit through concrete from 1.5' to ±3'). Petroleum type odors 5-8' while rollerbit. Spin casing to 8'. | | | | |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | 4. Rollerbit ahead to 14'. Rollerbit through obstruction 10-12.8' 8. Install 4" casing. | | | | |
| 30-50 | DENSE | 8-15 | STIFF | 5. Rollerbit ahead to 19'. | | | | |
| >50 | VERY DENSE | 15-30 | V. STIFF | 6. Rollerbit ahead to 24' (wood encountered to 22.5') | | | | |
| | | >30 | HARD | 7. 3" spoon used to collect sample S-9B. | | | | |
| | | | | 9. 3" spoon used to collect sample S-10B. | | | | |
| NOTES: | | | | | | | | |
| 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. | | | | | | | | |
| 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE | | | | | | | | |

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| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. | GZ-7 (C) |
| | KeySpan LNG Terminal | SHEET | 2 of 5 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 30 | | UP-2 | 24/8 | 31-33 | | Undisturbed Piston Sample | 10 | ORGANIC SILT |
| 35 | | S-11 | 24/19 | 34-36 | 2-1 1/12" | Very soft, gray, ORGANIC SILT, trace Fibers | 11 | |
| 40 | | S-12 | 24/13 | 39-41 | WOR/18" 1 | Very soft, gray, ORGANIC SILT, trace Organics, Shells, Fibers | 12 | |
| 45 | | S-13 | 24/5 | 44-46 | 1-3 2-2 | Medium stiff, gray, ORGANIC SILT, trace Organics, Shells, Fibers | 13 | ±47' |
| 50 | | S-14 | 24/5 | 49-51 | 6-10 13-14 | (Top 4"): Loose, gray, fine (+) to medium SAND, some Silt (Bottom 1"): Loose, brown, fine (+) to coarse (-) SAND, little Silt | 14 | |
| 55 | | S-15 | 24/6 | 54-56 | 23-15 15-15 | Dense, brown, fine to coarse (-) SAND, some Silt | 15 | |
| 60 | | S-16 | 24/10 | 59-61 | 23-27 20-22 | Dense, gray, fine to coarse (-) SAND, some Silt, trace fine Gravel | 16 | OUTWASH DEPOSITS |
| 65 | | S-17 | 24/12 | 64-66 | 13-12 8-14 | Medium dense, gray, fine to medium SAND, trace Silt S-18: (Top 2") Medium dense, gray, coarse SAND and fine Gravel, little fine to medium Sand, trace Silt | | |
| 70 | | S-18 | 24/10 | 69-71 | 27-16 | (Bottom 10"): Medium dense, gray, fine to medium SAND, trace Silt | | |

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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 10. Rollerbit ahead to 34'. |
| 4-10 LOOSE | 2-4 SOFT | 11. Rollerbit ahead to 39'. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 12. Rollerbit ahead to 44'. |
| 30-50 DENSE | 8-15 STIFF | 13. Drill ahead to 49'. |
| >50 VERY DENSE | 15-30 V. STIFF | 14. Drill ahead to 54'. Revert drilling mud introduced to ±54'. (Casing at 54') |
| | >30 HARD | 15. Drill ahead to 59'. Collect S-16. Drive casing to 59'. |
| | | 16. Drill ahead to 64'. 4-21-04 drive casing to 64'. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | |
|--|--------------------------|----------------------|
| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. |
| | KeySpan LNG Terminal | GZ-7 (C) |
| | Providence, Rhode Island | SHEET 3 of 5 |
| | | FILE NO. 32784 |
| | | CHKD BY DMA |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | | S-19 | 24/18 | 74-76 | 10-13 | Dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | 17 | OUTWASH DEPOSITS |
| | | | | | 19-19 | | | |
| 80 | | S-20 | 24/14 | 79-81 | 16-13 | Medium dense, gray, fine to medium SAND, trace Silt | | |
| | | | | | 15-14 | | | |
| 85 | | S-21 | 24/16 | 85-87 | 20-17 | Dense, gray, fine to coarse (-) SAND, trace Silt | | |
| | | | | | 16-18 | | | |
| 90 | | S-22 | 24/20 | 89-91 | 20-15 | Dense, gray, fine to medium SAND, trace Silt | | |
| | | | | | 20-18 | | | |
| 95 | | S-23 | 24/6 | 94-96 | 25-28 | Very dense, gray, fine to medium SAND, trace fine Gravel, trace Silt | | |
| | | | | | 26-18 | | | |
| 100 | | S-24 | 24/18 | 99-101 | 17-20 | Dense, gray, fine to medium SAND, little Silt | | |
| | | | | | 21-20 | | | |
| 105 | | S-25 | 24/19 | 104-106 | 14-12 | Medium dense, gray, fine to medium SAND, little Silt | | |
| | | | | | 12-15 | | | |
| 110 | | S-26 | 24/20 | 109-111 | 18-19 | Dense, gray, fine to medium SAND and SILT | | |
| | | | | | 28-37 | | | |
| 115 | | S-27 | 24/12 | 114-116 | 19-18 | Dense, gray, fine to coarse (-) SAND and SILT, trace fine Gravel | | |
| | | | | | 17-17 | | | |

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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 17. Drill ahead to 85'. Cobble encountered at 84'. |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 120 | | S-28 | 24/12 | 119-121 | 19-27 | Very dense, gray, fine to coarse (-) SAND, some Silt | | |
| | | | | | 28-24 | | | |
| 125 | | S-29 | 24/20 | 124-126 | 23-17 | Dense, gray, fine to coarse (-) SAND, little Silt, trace fine Gravel | | |
| | | | | | 17-16 | | | |
| 130 | | S-30 | 24/12 | 129-131 | 23-21 | (Top 9"): Dense, gray, fine to coarse (-) SAND, some Silt (Bottom 3"): Dense, gray, fine SAND and SILT | | |
| | | | | | 17-19 | | | |
| 135 | | S-31 | 24/12 | 134-136 | 35-31 | Very dense, gray, fine to coarse (-) SAND, some Silt | | 18 19 |
| | | | | | 29-33 | | | |
| 140 | | S-32 | 24/18 | 139-141 | 33-17 | Dense, gray, fine to coarse (-) SAND, some Silt | | |
| | | | | | 23-22 | | | |
| 145 | | S-33 | 24/12 | 144-146 | 67-71 | Very dense, gray, fine to coarse SAND, some Silt | | |
| | | | | | 64-30 | | | |
| 150 | | S-34 | 24/20 | 149-151 | 12-8 | Medium dense, gray, fine SAND, little Silt | | 21 22 |
| | | | | | 12-26 | | | |
| 155 | | S-35 | 24/24 | 154-156 | 27-32 | Very dense, gray, fine SAND, little Silt | | 23 24 |
| | | | | | 26-29 | | | |

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|------------------------------------|------------------------------------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 18. Hole collapsed (Bottom ±35') (Casing at ±64). |
| 4-10 LOOSE | 2-4 SOFT | 19. ±2" lens fine sand and silt |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 20. After sample S-33 spin casing from 64' to 145'. |
| 30-50 DENSE | 8-15 STIFF | 21. Two hours down time (rig repairs). |
| >50 VERY DENSE | 15-30 V. STIFF | 22. Drill ahead, approximately 3 feet of cobbles, then casing installed to ±149'. |
| | >30 HARD | 23. 0.5 hours downtime (oil pressure leak). |
| | | 24. Drill ahead collapsed, install casing to ±154'. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-7 (E) |
| | KeySpan LNG Terminal | SHEET | 1 of 1 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| | | | |
|------------|-----------------------------|----------------------|-------------------------------|
| BORING CO. | Guld | BORING LOCATION | See Exploration Location Plan |
| FOREMAN | Tom Paquette, John Medeiros | GROUND SURFACE ELEV. | ±14' DATUM MLLW |
| GZA ENG. | Joanne Kissinger | DATE START | 4/28/04 DATE END 4/28/04 |

| | | | | | |
|---|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 5" OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | | | | | The objective of this boring is to drill to approximately 27' depth to collect two undisturbed samples. Spoon samples not needed | | |
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| | | | | | | | | |
| 30 | | UP-1 | 24/23 | 27-29 | | UNDISTURBED PISTON SAMPLE OF ORGANIC SILT | | |
| | | UP-2 | 24/22 | 29-31 | | UNDISTURBED PISTON SAMPLE OF ORGANIC SILT | | |
| | | | | | | | | |
| | | | | | | End of Exploration at ±31' | | |

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| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 30-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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| A GEOENVIRONMENTAL INC. 1. BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-101 |
| | KeySpan LNG Control Building Expansion | SHEET | 1 of 1 |
| | Providence, Rhode Island | FILE NO. | 32784 |
| | | CHKD BY | DMA |

| | | | |
|--------------|----------------------------------|----------------------|-------------------------------|
| BORING CO. | Guild | BORING LOCATION | See Exploration Location Plan |
| FOREMAN | Tom Paquette, John Medeiros | GROUND SURFACE ELEV. | ±16' |
| LOGGING ENG. | Joanne Kissinger/ Daniel E. Oaks | DATE START | 4/28/04 |
| | | DATE END | 4/29/04 |

| | | | | | |
|---|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 4" OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | 4/29/04 | | 8.2' | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|---|---|--------|--|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | P | S-1 | 24/15 | 0-2 | 2-5 | Medium dense, brown/gray, fine to coarse SAND, trace fine | 1 | POSSIBLE FILL ±6' SAND AND SILT ±8' |
| | U | | | | 17-21 | Gravel, trace Silt | | |
| | S | S-2 | 24/17 | 2-4 | 21-42 | Very dense, brown, fine to coarse SAND, trace fine Gravel, | | |
| | H | | | | 23-25 | trace Silt | | |
| | 17 | S-3 | 24/13 | 4-6 | 13-12 | Medium dense, brown, fine to coarse SAND, trace fine Gravel, | | |
| | 34 | | | | 11-14 | trace Silt | | |
| | 40 | S-4 | 24/18 | 6-8 | 13-13 | Medium dense, brown, fine SAND and SILT | | |
| | 41 | | | | 15-18 | | | |
| | P | S-5 | 24/13 | 8-10 | 10-10 | Medium dense, brown, fine to coarse SAND, little fine Gravel, | | |
| | U | | | | 8-9 | trace Silt | | |
| 10 | S | | | | | | 2 | ±31' GLACIAL TILL |
| | H | | | | | | | |
| | ↓ | | | | | | | |
| | 58 | S-6 | 24/17 | 14-16 | 4-13 | Dense, brown, fine to coarse SAND, trace fine Gravel, trace | | |
| | 78 | | | | 24-36 | Silt | | |
| | 90 | | | | | | | |
| | 106 | | | | | | | |
| | 132 | | | | | | | |
| | | S-7 | 24/16 | 19-21 | 24-27 | Dense, brown, fine to coarse SAND, some Silt, trace fine Gravel | | |
| | | | | | 22-20 | | | |
| 20 | | | | | | | 3 | OUTWASH DEPOSITS |
| | | | | | | | | |
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| | | S-8 | 24/12 | 24-26 | 14-11 | Medium dense, brown, fine to coarse SAND, little Silt, trace fine | | |
| | | | | | 13-30 | Gravel | | |
| 30 | | | | | | | 3 | ±31' GLACIAL TILL |
| | | | | | | | | |
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| | | S-9 | 24/10 | 29-31 | 24-18 | Dense, brown/gray, fine GRAVEL, trace (+) coarse Gravel | | |
| | | | | | 20-27 | | | |
| | | | | | | | | |
| | S-10 | 24/20 | 31-33 | 11-21 | Dense, brown, fine to coarse SAND, little fine Gravel, trace Silt | | | |
| | | | | 24-30 | | | | |
| End of Exploration at ±33' | | | | | | | | |

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| GRANULAR SOILS BLOWS/FT DENSITY 4 VERY LOOSE 0 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE 0 VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Groundwater encountered at ±8'. 2. From 29' to 31' drove a piece of coarse gravel in tip of spoon. Sand was washed out of sample. 3. Observation well installed to 20': screen from 20' to 10', roadbox at ground surface. |
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NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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| GEOTECHNICAL BORING LOG GEOTECH/GEOHYDROLOGICAL CONSULTANTS PROVIDENCE, RHODE ISLAND 100 BROADWAY, PROVIDENCE, RHODE ISLAND 02903 TEL: 401-845-1234 FAX: 401-845-1234 WWW: WWW.GEOTECHCONSULTANTS.COM | PROJECT KeySpan LNG Control Building Expansion Providence, Rhode Island | REPORT OF BORING NO. GZ-102 SHEET 1 of 2 FILE NO. 32784 CHKD BY DMA |
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| DRILLING CO. Guild SUPERVISOR Tom Paquette, John Medeiros LOGGING ENG. Joanne Kissinger | BORING LOCATION See Exploration Location Plan GROUND SURFACE ELEV. ±16' DATUM MLLW DATE START 5/05/04 DATE END 5/06/04 |
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| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 4" OTHER: | GROUNDWATER READINGS DATE TIME WATER CASING STABILIZATION TIME 5/5/04 ±6' |
|---|---|

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|-------------------------|---|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 5 | | S-1 | | 0-2 | hand | Loose, brown, fine to coarse (-) SAND, little fine to coarse Gravel, little Silt | ±1' | TOPSOIL |
| | | | | | shovel | | | |
| | | S-2 | | 2-4 | hand | | | |
| | | | | | shovel | | | |
| | | S-3 | 24/23 | 4-6 | 5-8 | | | |
| 10 | | | | | | 1 | POSSIBLE FILL | |
| | | | | 6-7 | | | | |
| | | S-4 | 24/23 | 6-8 | 10-10 | | | Medium dense, tan, fine to medium SAND and SILT (wet) |
| 15 | | | | | | 3 | ±6' SAND AND SILT | |
| | | | | 11-10 | | | | |
| | | S-5 | 24/23 | 8-10 | 6-7 | | | Medium dense, tan, fine to medium SAND, little Silt (wet) |
| 20 | | | | | | 3 | ±6' SAND AND SILT | |
| | | | | 8-7 | | | | |
| | | S-6 | 24/15 | 14-16 | 8-10 | | | Medium dense, tan, fine to medium SAND, little Silt (wet) |
| 25 | | | | | | 3 | ±6' SAND AND SILT | |
| | | | | 10-10 | | | | |
| | | S-7 | 24/4 | 19-21 | 5-6 | | | Medium dense, brown, fine to coarse (-) SAND and fine to coarse Gravel, little Silt (wet) |
| 30 | | | | | | 3 | ±6' SAND AND SILT | |
| | | | | 9-9 | | | | |
| | | S-8 | 24/12 | 24-26 | 5-9 | | | Medium dense, brown, fine to coarse (-) SAND, some fine to coarse Gravel, little Silt (wet) |
| 35 | | | | | | 3 | ±6' SAND AND SILT | |
| | | | | 10-10 | | | | |
| | | S-9 | 24/18 | 29-31 | 5-5 | | | Medium dense, brown, fine to medium SAND, little Silt (wet) |
| | | | | | | | | |
| | | | | 8-11 | | | | |

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| GRANULAR SOILS BLOWS/FT DENSITY 4 VERY LOOSE 0 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE 0 VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Samples S-1 and S-2 obtained by hand digging. 2. Drilled ahead of casing. 3. Groundwater encountered at ±6'. |
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NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

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| BORING CO. <u>New Hampshire Boring</u> OPERMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Matthew Page</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>10 ft</u> DATUM <u>MLLW</u> DATE START <u>04/07/05</u> DATE END <u>04/08/05</u> |
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SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE: 4", 3" **OTHER:**

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|----------------------------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 24/10 | 0-2 | 8-10 | Medium dense, light brown, fine to medium SAND, some Silt, trace Asphalt | 1 | FILL |
| | P | | | | 8-20 | | | |
| | P | S-2 | 24/12 | 2-4 | 16-13 | Medium dense, dark brown, fine to coarse SAND, little Silt, trace fine to coarse Gravel, trace Asphalt | | |
| | P | | | | 13-7 | | | |
| | P | S-3 | 24/4 | 4-6 | 8-4 | Loose, orange/dark brown, fine to coarse SAND, little Silt, trace fine to coarse Gravel (wet) | | |
| | P | | | | 3-2 | | | |
| | P | S-4 | 24/10 | 6-8 | 2-1 | Very loose, dark brown, fine to coarse SAND, some Silt, trace fine Gravel (petro odor) | | |
| | P | | | | 1-1 | | | |
| 10 | 25 | S-5 | 24/8 | 9-11 | 2-2 | Loose, dark brown, fine to coarse SAND, little Silt, trace fine to coarse Gravel (petro odor, oil sheen) | | |
| | 40 | | | | 2-3 | | | |
| | 30 | S-6 | 24/14 | 11-13 | 21-28 | Dense, dark brown, fine to coarse SAND, little Silt, trace (-) fine Gravel (petro odor, oil sheen) | | |
| | 54 | | | | 16-13 | | ±13' | |
| | P | S-7 | 24/12 | 13-15 | 20-8 | Medium dense, gray/dark brown, fine to coarse SAND, little Silt, trace fine to coarse Gravel (petro odor) | | |
| 15 | P | | | | 9-9 | | 3 | SAND |
| | 25 | S-8 | 24/12 | 15-17 | 10-10 | Medium dense, gray, fine to coarse SAND, little Silt, trace fine to coarse Gravel (petro odor) | | |
| | 19 | | | | 8-8 | | | |
| | 22 | S-9 | 24/14 | 17-19 | 10-6 | Medium dense, gray, fine to coarse SAND, little Silt, trace fine to coarse Gravel (petro odor) | | |
| | 24 | | | | 7-5 | | | |
| | 26 | S-10 | 24/3 | 19-21 | 4-5 | Loose, gray, fine to coarse SAND, little Silt, trace fine Gravel | | |
| | P | | | | 1-1 | | ±21' | |
| | P | | | | | | | |
| | P | | | | | | | |
| 25 | P | S-11 | 24/12 | 24-26 | 2-WHO | Very loose, gray, fine SAND and SILT | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | ±28' | |
| | P | | | | | | ±29' ORGANIC SILT AND SAND | |
| | P | S-12a | 24/12 | 29-31 | 9-11 | S-12a: (top 4") Medium dense, black, organic SILT, trace fine Sand, trace fine Gravel | | |
| | P | S-12b | | | 10-8 | S-12b: (bottom 8") Medium dense, tan, fine SAND, little Silt, trace fine Gravel | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. P indicates casing pushed. S indicates casing spun. |
| 4-10 LOOSE | 2-4 SOFT | 2. Washed ahead of casing from 8 to 9 feet, took S-5 and S-6, casing driven 8 to 13', washed to bottom of casing at 13'. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Took S-7 washed to 15', took S-8 and S-9, casing driven 13 to 19', washed to bottom of casing at 19' |
| 30-50 DENSE | 8-15 STIFF | 4. Took S-10, casing pushed to 25' washed to 24' took S-11. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing pushed 24 to 29' washed to 29', took S-12. |
| | >30 HARD | 6. Cuttings at 28' possible organic silt and sand. |

NOTES:

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- 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|---------|------------|----------|---|--------|------------------------|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | P | S-13 | 24/10 | 34-36 | 8-8 | Medium dense, light brown, fine to medium SAND, some Silt, | 7 | SAND |
| | P | | | | 9-8 | trace (-) fine Gravel | | |
| | P | | | | | | | |
| | P | | | | | | | |
| 1 | P | S-14 | 24/14 | 39-41 | 8-7 | Medium dense, light brown SILT (Laminated Lenses of fine Sand) | 8 | SILT (LAMINATED) |
| | P | | | | 7-10 | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| 15 | P | S-15a | 24/18 | 44-46 | 8-12 | S-15a: (top 12") Medium dense, light brown/gray SILT | 9 | SAND |
| | P | S-15b | | | 13-12 | (Laminated Lense of fine Sand) | | |
| | P | | | | | S-15b: (bottom 6") Medium dense, brown/gray, fine to medium SAND, | | |
| | P | | | | | trace Silt, trace (-) fine Gravel | | |
| 50 | P | S-16 | 24/12 | 49-51 | 45-57 | Very dense, brown/gray, fine to coarse SAND, little Silt, little fine | 9 | SAND |
| | S | | | | 43-60 | to coarse Gravel | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 5 | S | S-17 | 24/12 | 54-56 | 18-26 | Dense, brown/gray, fine to medium SAND, trace Silt | 10 | SAND |
| | P | | | | 18-30 | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| 60 | P | S-18 | 24/14 | 59-61 | 21-23 | Dense, gray, fine to coarse SAND, trace Silt | 10 | SAND |
| | P | | | | 21-21 | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| 05 | P | S-19 | 24/8 | 64-66 | 68-27 | Very dense, gray, fine to coarse SAND, little Silt, little fine to | 12 | SAND |
| | P | | | | 37-33 | coarse Gravel | | |
| | P | | | | | | | |
| | P | | | | | | | |
|) | P | S-20 | 24/10 | 69-71 | 34-18 | Dense, gray, fine to coarse SAND, little Silt, little fine to coarse | 13 | SAND |
| | P | | | | 18-19 | Gravel | | |
| | P | | | | | | | |
| | P | | | | | | | |

| | | |
|-------------------------|-------------------------|---|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 7. Washed ahead of casing from 29 to 34, took S-13, switched from water to drilling mud, casing pushed from 29 to 34'. Washed to 39', took S-14. |
| 4-10 LOOSE | 2-4 SOFT | 8. Washed ahead to 44', took S-15, washed ahead to 49', Took S-16. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 9. Washed ahead to 54", took S-15, washed ahead to 49', took S-16. |
| 30-50 DENSE | 8-15 STIFF | 10. Approximately 2-inch of running sands. |
| >50 VERY DENSE | 15-30 V. STIFF | 11. Washed ahead to 64', took S-19. |
| | >30 HARD | 12. Washed ahead to 69', switched to 3" casing, casing advanced from 34 to 71'. Washed to 69', took S-20. |

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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | P | S-21 | 24/8 | 74-76 | 42-32 | Very dense, gray, fine to coarse SAND, some fine to coarse | 13 | SAND |
| | S | | | | 46-24 | Gravel, little Silt | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 80 | S | S-22 | 24/8 | 79-81 | 18-14 | Medium dense, gray, fine to coarse SAND, little (-) Silt | 14 | SAND |
| | S | | | | 15-14 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 85 | S | S-23 | 16/6 | 84-86 | 40-46 | Very dense, gray, fine to coarse SAND, some Silt, little fine to coarse Gravel | 15 | GLACIAL TILL |
| | S | | | | 100/4" | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-24 | 24/0 | 89-91 | 36-18 | NO RECOVERY | 16 | GLACIAL TILL |
| | S | | | | 22-27 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 95 | S | S-25 | 24/4 | 94-96 | 32-19 | Dense, gray, fine to coarse SAND, some fine to coarse Gravel, little (+) Silt | 16 | GLACIAL TILL |
| | | | | | 17-15 | | | |
| End of Exploration at ±96' | | | | | | | | |

| | | |
|---|---|--|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 13. Casing spun from 69 to 74', washed to 74', took S-21. 14. Washed ahead to 79', casing spun to 79', washed to 79, took S-22. 15. Washed ahead to 84', took S-23, washed ahead to 89', casing spun to 89', took to S-24. 16. Casing spun to 94', washed to 94', took S-25. Groundwater monitoring well installed; screen from 20', riser from 10', filter sand from 40', bentonite seal from 9', auger cuttings from 8', capped with road box and cement. |
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 0-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-11 | 24/11 | 39-41 | 26-22 | Dense, gray, fine to coarse SAND, some fine to coarse Gravel, | 12 | SAND AND GRAVEL |
| | S | | | | 17-22 | trace Silt | 13 | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 45 | S | S-12 | 24/10 | 44-46 | 20-21 | Dense, gray, fine to coarse SAND, little fine to coarse Gravel, | | |
| | S | | | | 19-15 | trace (+) Silt | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-13 | 24/16 | 49-51 | 18-18 | Dense, gray, fine to coarse SAND, trace Silt, trace (-) fine | | SAND |
| | S | | | | 20-25 | Gravel | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 5 | S | S-14 | 24/8 | 54-56 | 19-19 | Dense, dark gray, fine to medlum SAND, trace (+) Silt | | |
| | S | | | | 16-21 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 60 | S | S-15 | 24/10 | 59-61 | 16-11 | Medium dense, gray SILT and fine Sand | | SILT AND SAND |
| | S | | | | 14-11 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 65 | S | S-16 | 24/15 | 64-66 | 26-29 | Very dense, gray, fine to coarse SAND, some Silt, little fine to | | |
| | S | | | | 22-23 | coarse Gravel | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 70 | S | S-17 | 24/4 | 69-71 | 67-53 | Very dense, gray, fine to coarse SAND and fine to coarse | 14 | SAND AND GRAVEL |
| | S | | | | 26-34 | Gravel, trace Silt | 15 | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 75 | S | | | | | | | |

| | | | |
|------|---|---|---|
| | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 12. Casing is advanced to 34' (washing ahead) then S-11 (39-41') collected. 13. Collected bag sample B-2, B-2R. 14. Stone stuck in tip of spoon. 15. Borehole collapsed at 72'. Switched to 3-inch casing, advanced casing from 34' to 74'. |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF |
| 0-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|-----------------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | S | S-18 | 24/5 | 74-76 | 14-12 | Medium dense, dark gray, fine to coarse SAND, little fine to coarse Gravel, little Silt | SAND AND GRAVEL | |
| | S | | | | 12-12 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-19 | 24/10 | 79-81 | 17-20 | Dense, dark gray, fine to coarse SAND, little (+) fine to coarse Gravel, little Silt | SAND AND GRAVEL | |
| | S | | | | 16-20 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 95 | S | S-20 | 24/10 | 84-86 | 56-40 | Very dense, dark gray, fine to coarse SAND, some fine to coarse Gravel, little Silt | GLACIAL TILL | |
| | S | | | | 33-28 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-21 | 24/8 | 89-91 | 24-15 | Medium dense, dark gray, fine to coarse SAND, some Silt, trace fine Gravel | GLACIAL TILL | |
| | | | | | 14-13 | | | |
| 5 | | S-22 | 24/14 | 94-96 | 14-16 | Dense, dark gray, fine to coarse SAND, some Silt, trace fine Gravel | GLACIAL TILL | |
| | | | | | 17-17 | | | |
| 100 | | S-23 | 24/4 | 99-101 | 10-14 | Dense, dark gray, fine to coarse SAND, some (+) Silt, trace fine to coarse Gravel | GLACIAL TILL | |
| | | | | | 17-15 | | | |
| 105 | | S-24 | 24/12 | 104-106 | 26-20 | Dense, dark gray, fine to coarse SAND, some Silt, trace fine to coarse Gravel | GLACIAL TILL | |
| | | | | | 22-29 | | | |
| | | | | | | End of Exploration at ±106' | | |

| | | |
|------------------------|---------------------|--|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 16. Rollerbit ahead of casing from 90 to 104'. 17. Approximately 6" of running sands. |
| 4-10 LOOSE | 2-4 SOFT | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 10-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

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BORING NO. GZ-202A

| | | | |
|---|--------------------------|----------------------|-------------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-203 (OW) |
| | Keyspan LNG Facility | SHEET | 1 of 3 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| | | | |
|------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| OPERMAN | Charlie O'Donnel | GROUND SURFACE ELEV. | 18 ft |
| GZA ENG. | Daniel Oaks | DATE START | 03/30/05 |
| | | DATE END | 04/01/05 |

| | | | | | |
|---|----------------------|----------|-------|---------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | 03/30/05 | 10:30 am | 12.97 | 14' | 40 (Tidal) minutes |
| | 05/20/05 | | Well | 51 Days | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|-----------|------------|-----------|---|--------|------------------------|
| | | NO | PENI./REC | DEPTH (FT) | BLOWS/6" | | | |
| 10 | | S-1 | 24/12 | 0-2 | 7-9 | Medium dense, brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt | 1 2 | FILL |
| | | S-2 | 24/20 | 2-4 | 13-15 | Dense, brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt | | |
| | | S-3 | 24/10 | 4-6 | 13-14 | Medium dense, brown/tan, fine to coarse SAND, little fine to coarse Gravel, trace Silt | | |
| | | S-4a | 24/20 | 6-8 | 22-31 | S-4a: (top 14") Very dense, brown, fine to coarse SAND, little (+) fine to coarse Gravel, trace Silt, trace brick | | |
| | | S-4b | | | 38-42 | | | |
| | | S-5 | 24/12 | 8-10 | 19-11 | S-4b: (bottom 6") Very dense, black/brown, fine to coarse SAND, little fine to coarse Gravel, little Brick, trace (+) Ash, trace Silt | | |
| | | S-6 | 24/10 | 10-12 | 8-6 | S-5: Medium dense, brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt | | |
| | | S-7 | 24/12 | 12-14 | 6-4 | S-6: Medium dense, brown, fine SAND some Silt, trace brick (FILL) | | |
| | | S-8 | 21/2 | 14-15.75 | 7-4 | S-7: Loose, brown, fine to coarse SAND, some Silt, trace fine Gravel, trace (+) Brick | | |
| | | | | | 15-104/3" | S-8: Medium dense, Gravel (2" Boulder Chip) in tip of spoon | | |
| | | S-9 | 24/10 | 17-19 | 17-19 | Dense, gray, fine to coarse SAND, little fine to coarse Gravel, trace (+) Silt (Petro Odor) | | |
| | | S-10a | 24/12 | 19-21 | 6-5 | S-10A: (top 9") Medium dense, gray SILT, trace (-) fine Sand | | |
| | | S-10b | | | 9-11 | S-10B: (bot. 3") Medium dense, gray, fine to coarse SAND, little Silt, trace Shells (Petro odor) | | |
| | 25 | | S-11 | 24/12 | 21-23 | 19-18 | | |
| | | S-12 | 24/10 | 23-25 | 6-17 | S-12: Dense, gray, fine to medium SAND, trace (+) Silt, trace (-) fine to coarse Gravel | | |
| | | S-13 | 24/12 | 25-27 | 14-15 | S-13: Dense, gray, fine to medium SAND, little Silt | | |
| | | | | | 18-16 | | | |
| 30 | | S-14 | 24/20 | 29-31 | 6-2 | Soft, gray, organic SILT, trace (-) fine Sand | | ORGANIC SILT |
| | | | | | 2-2 | | | |
| | | UP-1 | 24/10 | 31-33 | push | NO RECOVERY | | |
| | | UP-2 | 24/24 | 33-35 | push | Grey, organic SILT | | |

| <table border="1"> <tr> <th colspan="2">GRANULAR SOILS</th> <th colspan="2">COHESIVE SOILS</th> </tr> <tr> <th>BLOWS/FT</th> <th>DENSITY</th> <th>BLOWS/FT</th> <th>DENSITY</th> </tr> <tr> <td>0-4</td> <td>VERY LOOSE</td> <td><2</td> <td>VERY SOFT</td> </tr> <tr> <td>4-10</td> <td>LOOSE</td> <td>2-4</td> <td>SOFT</td> </tr> <tr> <td>10-30</td> <td>MEDIUM DENSE</td> <td>4-8</td> <td>M. STIFF</td> </tr> <tr> <td>30-50</td> <td>DENSE</td> <td>8-15</td> <td>STIFF</td> </tr> <tr> <td>>50</td> <td>VERY DENSE</td> <td>15-30</td> <td>V. STIFF</td> </tr> <tr> <td></td> <td></td> <td>>30</td> <td>HARD</td> </tr> </table> | GRANULAR SOILS | | COHESIVE SOILS | | BLOWS/FT | DENSITY | BLOWS/FT | DENSITY | 0-4 | VERY LOOSE | <2 | VERY SOFT | 4-10 | LOOSE | 2-4 | SOFT | 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | 30-50 | DENSE | 8-15 | STIFF | >50 | VERY DENSE | 15-30 | V. STIFF | | | >30 | HARD | REMARKS: 1. Approximately 6" of running sands between 6-8". 2. Rollerbit between 6-8" possible ash in wash water. 3. Rollerbit 15.75 to 17" (sample 15-17) possible boulder cuttings in wash water. 4. Began use of bentonite (mud) in casing at 23' below ground surface. |
|--|----------------|----------------|----------------|--|----------|---------|----------|---------|-----|------------|----|-----------|------|-------|-----|------|-------|--------------|-----|----------|-------|-------|------|-------|-----|------------|-------|----------|--|--|-----|------|--|
| GRANULAR SOILS | | COHESIVE SOILS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BLOWS/FT | DENSITY | BLOWS/FT | DENSITY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-10 | LOOSE | 2-4 | SOFT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30-50 | DENSE | 8-15 | STIFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| >50 | VERY DENSE | 15-30 | V. STIFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | >30 | HARD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|---------------------|-------------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO | GZ-203 (OW) |
| | Keyspan LNG Facility | SHEET | 2 of 3 |
| | Providence, Rhode Island | FILE NO | 32784.01 |
| | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | | S-15A | 24/20 | 35-37 | 2-3 | S-15A: (top 16") Medium dense, gray, Organic SILT | ±36.5' | ORGANIC SILT |
| | | S-15B | | | 11-21 | S-15B: (bottom 4") Medium dense, gray, fine to coarse GRAVEL, some fine to coarse Sand, little (+) Organic Silt | | |
| 40 | | S-16A | 24/16 | 39-41 | 4-17 | S-16A: (top 8") Dense, gray SILT, some fine to medium SAND, trace (-) fine Gravel | | SAND |
| | | S-16B | | | 17-19 | S-16B: (bottom 8") Dense, gray/tan, fine to coarse SAND, little Silt, trace (+) fine to coarse Gravel | | |
| 45 | | S-17 | 24/8 | 44-46 | 11-11 | Medium dense, brown, fine to coarse SAND, trace (-) Silt, trace (-) fine Gravel | | |
| | | | | | 13-14 | | | |
| 50 | | S-18 | 24/10 | 49-51 | 15-9 | Medium dense, brown/gray, fine to coarse SAND, some (+) fine to coarse Gravel, trace (+) Silt | | |
| | | | | | 8-8 | | | |
| 55 | | S-19 | 24/12 | 54-56 | 14-23 | Dense, brown/gray, fine to coarse SAND, some (+) fine to coarse Gravel, trace (+) Silt | | |
| | | | | | 27-24 | | | |
| 60 | | S-20 | 24/12 | 59-61 | 19-27 | Very dense, brown/gray/tan, fine to coarse SAND, little (-) fine to coarse Gravel, trace (+) Silt | | |
| | | | | | 34-23 | | | |
| 65 | | S-21 | 24/6 | 64-66 | 21-26 | Very dense, gray, fine to coarse SAND, some fine to coarse Gravel (Boulder Chlp), little Silt | | |
| | | | | | 26-21 | | | |
| 70 | | S-22 | 24/9 | 69-71 | 63-39 | Very dense, gray/tan, fine to coarse GRAVEL and fine to coarse Sand, little (+) Silt | 5. | |
| | | | | | 37-58 | | | |
| 75 | | | | | | | | |

| | | | | |
|------------------------------------|--------------|------------------------------------|-----------|------------------|
| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | 5. Casing at 60' |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 30-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|------------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | | | |
| 5 | | S-23A | 24/14 | 74-76 | 19-18 | S-23A: (top 11") Very dense, gray SILT | | SILT |
| | | S-23B | | | 24-23 | S-23B: (bottom 3") Very dense, gray SILT, some fine to medium Sand | 6 | |
| 10 | | S-24 | 24/14 | 79-81 | 8-16 | Dense, gray SILT | | SILT |
| | | | | | 24-19 | | 7 | |
| 65 | | S-25 | 24/15 | 84-86 | 27-24 | Dense, gray SILT, little (+) fine Sand, little (+) fine to coarse | | SAND |
| | | | | | 24-19 | Gravel | | |
| 100 | | S-26 | 14/3 | 89-91 | 35-73 | Very dense, gray SILT and fine Sand, little (+) fine Gravel | | TILL |
| | | | | | 103/2" | | | |
| 95 | | S-27 | 24/14 | 94-96 | 28-34 | Very dense, gray, fine to medium SAND, trace (+) Silt | | SAND |
| | | | | | 38-31 | | | |
| 100 | | S-28 | 24/18 | 99-101 | 51-49 | Very dense, gray, fine to medium SAND, little fine to coarse | | TILL |
| | | | | | 53-46 | Gravel, trace (+) Silt | | |
| 05 | | S-29 | 11/10 | 104-106 | 105-120/5" | Very dense, gray, fine to coarse SAND, some (+) Silt, little (+) fine to coarse Gravel (TILL) | | TILL |
| | | | | | | | 8 9 | |
| | | | | | | End of Exploration at ±105' | | |
| 110 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: | |
|------------------------------------|------------------------------------|----------|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | | 6. Casing advanced to 60', then sample S-23 taken (74-76'). 7. Driller reported 5" cave-in. Casing advanced from 60' to 74' then cleaned out to 79' prior to collecting sample S-24. 8. Proceeding open-hole from 74' to end of exploration. 9. Groundwater monitoring well installed; cuttings and boring collapse from 105' to 20', screened from 10' to 20', filter sand from 21' to 9', bentonite seal from 9' to 8', cuttings from 0-8', capped off with stand pipe to 1' above ground surface and cemented. |
| 4-10 LOOSE | 2-4 SOFT | | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | | |
| 0-50 DENSE | 8-15 STIFF | | |
| >50 VERY DENSE | 15-30 V. STIFF >30 HARD | | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|--|--------------------------|----------------------|--------------|
| GZA GEOENVIRONMENTAL INC. 10 BROADWAY, PROVIDENCE, RHODE ISLAND EOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-204A (OW) |
| | Keyspan LNG Facility | SHEET | 1 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| | | | |
|------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| DREMAN | Charlie O'Donnel | GROUND SURFACE ELEV. | 14 ft |
| GZA ENG. | Dan Oaks | DATUM | MLLW |
| | | DATE START | 04/12/05 |
| | | DATE END | 04/12/05 |

| | | | | | |
|--|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 5" / 4" OTHER: | GROUNDWATER READINGS | | | | |
| | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| | 05/20/05 | | 11.40 | Well | 38 Days |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION | | |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|--------|--|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | | | |
| | S | | | | | see boring GZ-204 for 0' to 8' | 2 | | | |
| | S | | | | | | | | | |
| | S | | | | | | | | | |
| | S | | | | | | | | | |
| | P | | | | | | | | | |
| | P | | | | | | | | | |
| | P | | | | | | | | | |
| | P | | | | | | | | | |
| 10 | 5 | S-1 | 24/8 | 8-10 | 10-12 | Medium dense, brown SILT, some fine to coarse Sand | ±8' | SILT | | |
| | 11 | | | | 8-3 | | ±10' | | | |
| | 28 | S-2A | 24/24 | 10-12 | 15-16 | S-2A: (top 12") Dense, brown, fine to coarse SAND, little (+) fine | | SAND | | |
| | 24 | S-2B | | | 15-8 | to coarse Gravel, trace Silt (Petro Odor) | ±11.5' | | | |
| 15 | 28 | | | | | S-2B: (bottom 12") Dense, brown SILT, trace fine to coarse | 3 | SILT | | |
| | 35 | | | | | Sand | | | | |
| | 30 | S-3 | 24/8 | 14-16 | 15-15 | Medium dense, brown SILT, trace fine to coarse Sand, trace | | | | |
| | 33 | | | | 12-7 | fine Gravel | | | | |
| 25 | 21 | | | | | | 4 | SAND | | |
| | 25 | | | | | | | | | |
| | 23 | | | | | | | | | |
| | 27 | S-4 | 24/10 | 19-21 | 8-6 | Medium dense, gray, fine to coarse SAND, little fine to coarse | | | ±17.5' | |
| | 18 | | | | 5-4 | Gravel, trace (+) Silt | | | | |
| | 18 | | | | | | | | | |
| | 21 | | | | | | | | | |
| | 24 | | | | | | | | | |
| 25 | 17 | S-5A | 24/12 | 24-26 | 5-15 | S-5A: (top 10") Dense, gray, fine to coarse SAND, little fine to | 5 | SAND | | |
| | 42 | S-5B | | | 35-10 | coarse Gravel, trace Silt | | | | |
| | 38 | | | | | S-5B: (bottom 2") Dense, black/gray, fine to medium SAND, | | | | |
| | 46 | | | | | trace (+) Silt | | | | |
| | 53 | | | | | | | | | |
| 30 | 41 | S-6 | 24/12 | 29-31 | 13-8 | Medium dense, black/gray, fine to medium SAND, trace Silt | 6 | | | |
| | 42 | | | | 12-12 | | | | | |
| | 39 | | | | | | | | | |
| | 41 | | | | | | | | | |
| | 40 | | | | | | | | | |

| | | |
|---|--|---|
| GRANULAR SOILS BLOWS/FT DENSITY 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. GZ-104A located 5' South from GZ-104. 2. Casing spun to 4', washed to 8' then pushed to 8', then S-1 taken (8-10'). 3. Casing driven to 14'. Washed to 14', then S-3 (14-16') taken. 4. Casing driven to 19', washed to 19', then S-4 (19-21') taken. 5. Casing driven to 24', washed to 24', then S-6 (24-26') taken. 6. Casing driven to 29', wash to 29', then S-6 (29-31') taken. |
|---|--|---|

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|--|--------------------------|----------------------|--------------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND | PROJECT | REPORT OF BORING NO. | GZ-204A (OW) |
| | Keyspan LNG Facility | SHEET | 2 of 2 |
| GEOTECH/GEOHYDROLOGICAL CONSULTANTS | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|---|----------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 53 | S-7 | 24/12 | 34-36 | 9-17 | Dense, gray/black, fine SAND, some Silt | 7 | SAND |
| | 68 | | | | 20-18 | | | |
| | 80 | | | | | | | |
| | 79 | | | | | | | |
| | 98 | | | | | | | |
| 40 | 94 | S-8 | 24/10 | 39-41 | 59-56 | Very dense, gray, fine to coarse SAND, some fine to coarse Gravel, little Silt | 8 | SAND and GRAVEL |
| | 122 | | | | 55-40 | | | |
| | 128 | | | | | | | |
| | 98 | | | | | | | |
| | 95 | | | | | | | |
| 45 | 75 | S-9 | 24/11 | 44-46 | 40-46 | Very dense, gray, fine to coarse SAND, some (+) fine to coarse Gravel, some Silt | 9 | |
| | 108 | | | | 106-78 | | | |
| | 112 | | | | | | | |
| | 118 | | | | | | | |
| | 100 | | | | | | | |
| 50 | | S-10 | 24/14 | 49-51 | 86-61 | Very dense, gray, fine to coarse SAND, some (+) fine to coarse Gravel, some Silt | 10 11 | |
| | | | | | 52-45 | | | |
| End of Exploration at ±51' | | | | | | | | |
| 5 | | | | | | | | |
| 60 | | | | | | | | |
| 75 | | | | | | | | |

| | | | | |
|--|--|---|--|---|
| GRANULAR SOILS BLOWS/FT DENSITY 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE | | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | | REMARKS: 7. Casing driven to 34', washed to 34', then S-7 (34-36') taken. 8. Casing driven to 39', washed to 39' then S-8 (39-41') taken. 9. Casing driven to 44', washed to 44' then S-9 (44-46') taken. 10. Casing driven to 49', washed to 49', then to S-10 (49-51') taken. 11. Groundwater monitoring well installed; screened from 16-4', riser from 5' to 0, guard pipe to +2.8'. Filter sand from 16-4'. Bentonite seal from 4' to 3', drill cuttings from 3' to 0'. Capped off with guard pipe and cement. |
|--|--|---|--|---|

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

BORING NO. GZ-104A (OW)

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION | | | |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|--|---|--|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | | | | |
| | P | S-1 | 24/6 | 0-2 | 5-6 | Medium dense, brown, fine to coarse SAND and SILT, some (-) fine to coarse Gravel | ±1' | FILL | | | |
| | P | | | | 4-5 | | | | | | |
| | P | S-2 | 24/14 | 2-4 | 7-11 | | | | | | |
| | P | | | | 15-12 | | | | | | |
| | P | S-3 | 24/20 | 4-6 | 6-8 | | | | | | |
| | P | | | | 10-11 | | | | | | |
| | P | S-4 | 24/20 | 6-8 | 12-12 | | | | | | |
| | P | | | | 12-13 | | | | | | |
| 10 | | S-5 | 24/18 | 9-11 | 12-14 | | | | Medium dense, brown/gray SILT, trace fine Sand | 1 | |
| | | | | | 15-11 | | | | | | |
| 15 | | S-6 | 24/18 | 14-16 | 13-11 | Medium dense, brown SILT | | | | | |
| | | | | | 9-8 | | | | | | |
| 20 | | S-7 | 24/14 | 19-21 | 11-11 | Medium dense, black, fine to medium SAND, little (+) Silt | | SAND | | | |
| | | | | | 13-12 | | | | | | |
| 25 | | S-8 | 24/14 | 24-26 | 15-13 | Medium dense, gray, fine to medium SAND, trace Silt (Petroleum Odor) | | | | | |
| | | | | | 16-18 | | | | | | |
| 30 | | S-9 | 24/20 | 29-31 | 16-17 | Dense, gray/brown SILT, little (-) fine Sand | 2 | SILT | | | |
| | | | | | 20-20 | | | | | | |

| GRANULAR SOILS | | COHESIVE SOILS | | REMARKS: |
|----------------|--------------|----------------|-----------|---|
| BLOWS/FT | DENSITY | BLOWS/FT | DENSITY | |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | 1. Casing pushed to 9' then S-5 taken 9-11. 2. Driller reports greater drilling difficulty beginning at 32'. |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 0-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

NOTES:

- 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
- 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. | GZ-205 |
| | Keyspan LNG Facility | SHEET | 2 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|-----------------|--------|----------|------------|----------------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | | S-10 | 24/12 | 34-36 | 23-20 21-21 | Dense, gray SILT, trace (+) fine to coarse Sand, trace (-) fine Gavel | | SILT ±37.5' |
| 0 | | S-11 | 24/14 | 39-41 | 25-30 32-30 | Very dense, brown SAND, some (-) fine to coarse Gravel, trace (+) Silt | | |
| 45 | | S-12 | 24/10 | 44-46 | 25-32 20-21 | Very dense, brown, fine to coarse SAND, trace (+) Silt | | SAND |
| 50 | | S-13 | 24/0 | 49-51 | 61-68 16-16 | NO RECOVERY | | |
| | | | | | | End of Exploration at ±51' | 3 | |
| 5 | | | | | | | | |
| 60 | | | | | | | | |
| 75 | | | | | | | | |

| | | | | |
|---|--------------|---|------------------|--|
| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: 3. 50-51', spoon drive with 300lb hammer, Impression: Pushing Cobble. |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 0-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 >30 | V. STIFF HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | |
|---|---|
| BORING CO. <u>New Hampshire Boring</u> OPERMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Dan Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>14</u> DATUM <u>MLLW</u> DATE START <u>04/13/05</u> DATE END <u>04/14/05</u> |
|---|---|

| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>5" / 4"</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>04/14/05</td> <td>10:00am</td> <td>7.3'</td> <td>14.0</td> <td>20 Minutes</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 04/14/05 | 10:00am | 7.3' | 14.0 | 20 Minutes | | | | | |
|---|--|-------|--------|--------------------|--------|--------------------|----------|---------|------|------|------------|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | |
| 04/14/05 | 10:00am | 7.3' | 14.0 | 20 Minutes | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|-----------|--|---|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | S | | | | | 2 | 4" ASPHALT | |
| | S | | | | | | ±2' AGGREGATE AND COBBLES | |
| | S | S-1 | 21/6 | 2-4 | 30-45 | | Very dense, brown/green GRAVEL and fine to coarse Sand, some Silt Very dense, brown/black, fine to coarse SAND and fine to coarse Gravel, some (+) Silt Very dense, brown, red, fine to coarse SAND and fine to coarse GRAVEL, some (+) Silt Very dense, brown, fine to coarse SAND and fine to coarse Gravel, some Silt Very dense, brown, fine to coarse SAND and fine to coarse Gravel, some Silt Dense, brown, fine to coarse SAND, some (+) fine to coarse Gravel, some Silt Very dense, brown fine to coarse GRAVEL and fine to coarse Sand, some Silt Very dense, gray, fine to coarse GRAVEL, trace (+) fine to coarse Sand, trace Silt S-10A: (top 2") Dense, brown SILT, little fine to coarse Sand S-10B: (bottom 4") Dense, brown, fine to coarse SAND, some Silt, trace fine Gravel Dense, brown, fine to coarse SAND (containing 1" varve of fine sand, little fine Gravel, little Silt | |
| | S | | | | 95-105/3" | 3 | | |
| | 147 | S-2 | 24/8 | 4-6 | 12-41 | 4 | | |
| | 101 | | | | 47-47 | 5 | | |
| | 106 | S-3 | 24/14 | 6-8 | 49-52 | 6 | | |
| | 89 | | | | 51-40 | 7 | | |
| | 35 | S-4 | 24/14 | 8-10 | 29-37 | 8 | | |
| | 64 | | | | 41-35 | 9 | | |
| | 24 | S-5 | 24/12 | 10-12 | 38-32 | 10 | | |
| | 48 | | | | 34-31 | 11 | | |
| | 45 | S-6 | 24/10 | 12-14 | 38-39 | 12 | | |
| | 34 | | | | 33-23 | 13 | | |
| | 48 | S-7 | 24/10 | 14-16 | 15-14 | 14 | | |
| | 46 | | | | 16-22 | 15 | | |
| | 90 | S-8 | 24/14 | 16-18 | 40-100 | 16 | | |
| | 174/4" | | | | 43-30 | 17 | | |
| | Washed Ahead | | | | | 18 | | |
| | 39 | S-9 | 24/2 | 19-21 | 35-25 | 19 | | |
| | 59 | | | | 29-26 | 20 | | |
| | 68 | | | | | 21 | | |
| | 294 | | | | | 22 | | |
| | 170 | | | | | 23 | | |
| | 80 | S-10A | 24/8 | 24-26 | 35-22 | 24 | | |
| | 95 | S-10B | | | 16-19 | 25 | | |
| | 52 | | | | | 26 | | |
| | 81 | | | | | 27 | | |
| | 108 | | | | | 28 | | |
| | 38 | S-11 | 24/8 | 29-31 | 22-20 | 29 | | |
| | 54 | | | | 16-19 | 30 | | |
| | 59 | | | | | 31 | | |
| | 68 | | | | | 32 | | |
| | 73 | | | | | 33 | | |

| | | | |
|------------------------------------|------------------------------------|---|--|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: | 7. Casing driven to 14', washed to 14' then S-7 (14-16") and S-8 (16-18") taken. 8. Casing driven to 17.3' obstructed, drilled ahead to 19' 9. Casing driven to 19', washed to 19' then S-9 (19-21") taken. |
| 0-4 VERY LOOSE | <2 VERY SOFT | 2. Augered through 4" asphalt 8" of coarse, then 1' cobbles, then took spoon 2-4' for S-1. | |
| 4-10 LOOSE | 2-4 SOFT | 3. PW5" casing spun to 4' then S-2 taken (4-6'). | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 4. Open hole on S-3 (6-8'). | |
| 0-50 DENSE | 8-15 STIFF | 5. 4" HW casing driven from 4' to 8'. Wash to 8' then S-4 (8-10') taken. | |
| >50 VERY DENSE | 15-30 V. STIFF | 6. Casing driven to 10', washed to 10' then S-5 (10-12") and S-6 (12-14") taken. | |
| | >30 HARD | | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 70 | S-12 | 24/12 | 34-36 | 20-25 | Very dense, brown SILT, trace fine Sand | 12 | SILT |
| | 65 | | | | 33-33 | | | |
| | 75 | | | | | | | |
| | 60 | | | | | | | |
| | 68 | | | | | | | |
| | 58 | S-13 | 24/20 | 39-41 | 19-26 | Very dense, gray SILT | 13 | |
| | 86 | | | | 28-26 | | | |
| | 107 | | | | | | | |
| | 218/9" | | | | | | | |
| | Wash Ahead | | | | | | | |
| | 64 | S-14 | 24/20 | 44-46 | 36-63 | Very dense, brown/gray, fine to coarse SAND, some Silt, little fine to coarse Gravel | 14 | SAND |
| | 75 | | | | 85-108 | | | |
| | 76 | | | | | | | |
| | 78 | | | | | | | |
| | 65 | | | | | | | |
| 50 | S | S-15 | 24/18 | 49-51 | 24-25 | Very dense, gray SILT | 15 | SILT |
| | S | | | | 27-25 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | S-16 | 24/6 | 54-56 | 53-53 | Very dense, gray, fine to coarse SAND, some (+) fine to coarse Gravel, some (-) Silt | 16 | SAND |
| | S | | | | 51-47 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 60 | | S-17A | 24/16 | 59-61 | 76-74 | S-17A: (top 8") Very dense, gray, fine to coarse SAND, little (+) Silt, trace (+) fine Gravel S-17B: (bottom 8") Very dense, gray SILT, trace (-) fine Sand | 17 | SILT |
| | | S-17B | | | 72-63 | | | |
| | | | | | | | | |
| 35 | | S-18 | 17/12 | 64-66 | 92-89 | Very dense, grey, fine to coarse SAND and Silt, some fine Gravel (TILL) | 18 | TILL |
| | | | | | 118/5" | | | |
| Apparent Refusal at ±65.5' | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 10. Casing driven to 24', washed to 24', then S-10 (24-26') taken. |
| 4-10 LOOSE | 2-4 SOFT | 11. Casing driven to 29', washed to 29', then S-11 (29-31') taken. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 12. Casing driven to 34', washed to 34', then S-12 (34-36') taken. |
| 30-50 DENSE | 8-15 STIFF | 13. Casing driven to 39', washed to 39', then S-13 (39-41') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 14. Casing driven to 42'9" washed ahead to 44' then S-14 (44-46) taken. |
| | >30 HARD | 15. Casing driven to 49', washed to 49' then S-15 (49-51') taken. |
| | | 16. Mudded open hole to (washed ahead) to 54' then S-16 (54-56') taken. |
| | | 17. Telescope 3" NW indicates 4" HW casing, spin NW to 59', wash to 59' then S-17 (59-61') taken. |
| | | 18. Open hole (washed ahead) to 64' then S-18 (64-66') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| | | | |
|---|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEO TECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-207 |
| | Keyspan LNG Facility | SHEET | 1 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| | | | |
|------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| OREMAN | Charlie O'Donnel | GROUND SURFACE ELEV. | 14.5 ft |
| GZA ENG. | Daniel E. Oaks | DATUM | MLLW |
| | | DATE START | 04/26/05 |
| | | DATE END | 04/26/05 |

| | | | | | |
|---|----------------------|------|-------|--------|--------------------|
| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | GROUNDWATER READINGS | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| CASING SIZE: 4" HW OTHER: | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|-----------------|--------|----------|------------|----------|--|----------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | 1 | SAND (FILL) | |
| | 40 | S-1 | 24/12 | 4-6 | 27-30 | | | |
| | 42 | | | | 30-38 | | | |
| | 51 | S-2 | 24/14 | 6-8 | 38-34 | 2 | SILT | |
| | 56 | | | | 43-39 | | | |
| 10 | 13 | S-3A | 24/18 | 8-10 | 10-11 | | ±9' | |
| | 18 | S-3B | | | 15-14 | | | |
| | 23 | S-4 | 24/16 | 10-12 | 14-14 | | | |
| | 28 | | | | 20-19 | | | |
| | 28 | | | | | | ±13' | |
| | 37 | | | | | | | |
| 15 | 18 | S-5 | 24/12 | 14-16 | 8-9 | 3 | SAND | |
| | 22 | | | | 13-14 | | | |
| | 31 | | | | | | | |
| | 32 | | | | | | | |
| 0 | 33 | S-6 | 24/10 | 19-21 | 7-8 | 4 | | |
| | 30 | | | | 10-11 | | | |
| | 28 | | | | | | | |
| | 30 | | | | | | | |
| 25 | 31 | S-7 | 24/10 | 24-26 | 5-8 | 5 | | |
| | 33 | | | | 12-14 | | | |
| | 42 | | | | | | | |
| | 35 | | | | | | | |
| 0 | 32 | | | | | | | |
| | 38 | S-8 | 24/11 | 29-31 | 8-7 | 6 | | |
| | 37 | | | | 9-10 | | | |
| | 30 | | | | | | | |
| | 34 | | | | | | | |
| | 36 | | | | | | | |

| <table border="1"> <tr> <th>GRANULAR SOILS</th> <th>COHESIVE SOILS</th> </tr> <tr> <td>BLOWS/FT DENSITY</td> <td>BLOWS/FT DENSITY</td> </tr> <tr> <td>0-4 VERY LOOSE</td> <td><2 VERY SOFT</td> </tr> <tr> <td>4-10 LOOSE</td> <td>2-4 SOFT</td> </tr> <tr> <td>0-30 MEDIUM DENSE</td> <td>4-8 M. STIFF</td> </tr> <tr> <td>0-50 DENSE</td> <td>8-15 STIFF</td> </tr> <tr> <td>>50 VERY DENSE</td> <td>15-30 V. STIFF</td> </tr> <tr> <td></td> <td>>30 HARD</td> </tr> </table> | GRANULAR SOILS | COHESIVE SOILS | BLOWS/FT DENSITY | BLOWS/FT DENSITY | 0-4 VERY LOOSE | <2 VERY SOFT | 4-10 LOOSE | 2-4 SOFT | 0-30 MEDIUM DENSE | 4-8 M. STIFF | 0-50 DENSE | 8-15 STIFF | >50 VERY DENSE | 15-30 V. STIFF | | >30 HARD | REMARKS: 1. Vacuum excavation from 0' - 4' 2. Casing driven to 8', cleaned to 8', through S-3 (8-10') and S-4 (10-12') taken. 3. Casing driven to 14', cleaned to 14', then S-5 (14-16') taken. 4. Casing driven to 19', cleaned to 19', then S-6 (19-21') taken. 5. Casing driven to 24', cleaned to 24', then S-7 (24-26') taken. 6. Casing driven to 29', cleaned to 29', then S-8 (29-31') taken. |
|---|------------------|----------------|------------------|------------------|----------------|--------------|------------|----------|-------------------|--------------|------------|------------|----------------|----------------|--|----------|---|
| GRANULAR SOILS | COHESIVE SOILS | | | | | | | | | | | | | | | | |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | | | | | | | | | | | | | | | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | | | | | | | | | | | | | | | | |
| 4-10 LOOSE | 2-4 SOFT | | | | | | | | | | | | | | | | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | | | | | | | | | | | | | | | | |
| 0-50 DENSE | 8-15 STIFF | | | | | | | | | | | | | | | | |
| >50 VERY DENSE | 15-30 V. STIFF | | | | | | | | | | | | | | | | |
| | >30 HARD | | | | | | | | | | | | | | | | |

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|--|--------------------------|---------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND | PROJECT | REPORT OF BORING NO | GZ-207 |
| | Keyspan LNG Facility | SHEET | 2 of 2 |
| GEOTECH/GEOHYDROLOGICAL CONSULTANTS | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 66 | S-9 | 24/15 | 34-36 | 9-9 | Medium dense, brown, fine SAND and SILT (Sheen & Petroleum odor) | 7 | SAND |
| | 72 | | | | 12-13 | | | |
| | 68 | | | | | | | |
| | 68 | | | | | | | |
| | 78 | | | | | | | |
| 40 | 72 | S-10A | 24/12 | 39-41 | 6-6 | S-10A: (top 6") Medium dense, brown, fine SAND, some (+) Silt | 8 | ±40' |
| | 74 | S-10B | | | 9-9 | S-10B: (bottom 6") Medium dense, brown SILT, trace (-) fine Sand | | |
| | 68 | | | | | | | |
| | 85 | | | | | | | |
| | 76 | | | | | | | |
| 45 | 84 | S-11A | 24/8 | 44-46 | 17-16 | S-11A: (top 2") Medium dense, brown SILT, trace fine to coarse Sand | 9 | ±45' |
| | 69 | S-11B | | | 12-11 | S-11B: (bottom 6") Medium dense, brown, fine to coarse SAND, little (+) fine to coarse Gravel, little (-) Silt | | |
| | 72 | | | | | | | |
| | 70 | | | | | | | |
| | 67 | | | | | | | |
| 50 | | S-12 | 24/7 | 49-51 | 7-8 | Medium dense, gray, fine to coarse SAND, some (-) Silt, trace (-) fine Gravel | 10 | |
| | | | | | 7-10 | | | |
| End of Exploration at ±51' | | | | | | | | |

| | | | | |
|---|--------------|---|-----------|---|
| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: 7. Casing drive to 34' cleaned to 34' then S-9 (34-36') taken. 8. Drive casing to 39', cleaned to 39' through S-10 (39-41') taken. 9. Drive casing to 44', cleaned to 44' then S-11 (44-46') taken. 10. Drive casing to 49', cleaned to 49' then S-12 (49-51') taken. |
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 0-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-208 |
| | Keyspan LNG Facility | SHEET | 1 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY: | AH |

| | | | |
|------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| OREMAN | Charlie O'Donnell | GROUND SURFACE ELEV. | 14.5 ft |
| GZA ENG. | Daniel E. Oaks | DATE START | 04/22/05 |
| | | DATE END | 04/25/05 |

| | |
|---|---|
| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | GROUNDWATER READINGS |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | DATE TIME WATER CASING STABILIZATION TIME |
| CASING SIZE: 4" HW OTHER: | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|---|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | 1 | SAND (FILL) | |
| | 9 | S-1 | 24/12 | 4-6 | 8-9 | | Medium dense, blue/brown, fine to medium SAND, trace (-) | |
| | 12 | | | | 9-9 | | Silt | |
| | 12 | S-2 | 24/14 | 6-8 | 9-8 | | Medium dense, blue/tan, fine to medium SAND, trace (-) Silt | |
| | 13 | | | | 6-6 | | | |
| | 4 | S-3 | 24/14 | 8-10 | 3-4 | 2 | Loose, brown, fine to coarse SAND, little fine to coarse | |
| | 9 | | | | 3-5 | | Gravel, trace (+) Silt | |
| 10 | 13 | S-4A | 24/24 | 10-12 | 9-8 | | S-4A: (top 12") Medium dense, brown, fine to coarse SAND, | |
| | 20 | S-4B | | | 7-9 | | little fine Gravel, little (-) Silt | |
| | 28 | | | | | | S-4B: (bottom 12) Medium dense, brown SILT | |
| | 34 | | | | | | | |
| 15 | 34 | S-5 | 24/14 | 14-16 | 17-19 | 3 | Dense, brown/gray, fine to coarse SAND, some (-) fine to | |
| | 38 | | | | 21-20 | | coarse Gravel, little (-) Silt (Petro Odor) | |
| | 37 | | | | | | | |
| | 42 | | | | | | | |
| | 46 | | | | | | | |
| 0 | 37 | S-6A | 24/10 | 19-21 | 12-13 | 4 | S-6A: (top 5") Medium dense, brown, fine to coarse SAND, | |
| | 34 | S-6B | | | 11-10 | | trace fine Gravel, trace Silt (Petroleum Odor & Sheen) | |
| | 33 | | | | | | S-6B: (bottom 5") Medium dense, brown SILT (Petro Odor & Sheen) | |
| | 41 | | | | | | | |
| | 41 | | | | | | | |
| 25 | 42 | S-7 | 24/12 | 24-26 | 7-10 | 5 | Medium dense, black/brown, fine to coarse SAND, trace (+) | |
| | 39 | | | | 13-19 | | Silt (petro odor) | |
| | 45 | | | | | | | |
| | 41 | | | | | | | |
| | 37 | | | | | | | |
| 0 | 36 | S-8 | 24/14 | 29-31 | 9-13 | 6 | Dense, brown, fine to coarse SAND, trace (-) Silt | |
| | 34 | | | | 18-15 | | | |
| | 39 | | | | | | | |
| | 45 | | | | | | | |
| | 49 | | | | | | | |
| | | | | | | | ±33.5 SAND | |

| | | |
|--|---|--|
| GRANULAR SOILS BLOWS/FT DENSITY 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 VERY SOFT 2-4 SOFT 4-8 M. STIFF 8-15 STIFF 15-30 V. STIFF >30 HARD | REMARKS: 1. Vacuum excavation from 0' - 4' 2. Casing driven to 8', cleaned to 8', through S-3 (8-10') and S-4 (10-12') taken. 3. Casing driven to 14', cleaned to 14', then S-5 (14-16') taken. 4. Casing driven to 19', cleaned to 19', then S-6 (19-21') taken. 5. Casing driven to 24', cleaned to 24', then S-7 (24-26') taken. 6. Casing driven to 29', cleaned to 29', then S-8 (29-31') taken. |
|--|---|--|

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 52 | S-9 | 24/16 | 34-36 | 10-12 | Medium dense, brown/gray/red, fine SAND, trace (+) Silt | 7 | SAND |
| | 38 | | | | 16-18 | | | |
| | 51 | | | | | | | |
| | 47 | | | | | | | |
| | 54 | | | | | | | |
| 41 | 41 | S-10 | 24/14 | 39-41 | 8-9 | Medium dense, gray/brown SILT, trace (-) fine to coarse Sand | 8 | SILT |
| | 47 | | | | 14-11 | | | |
| | 59 | | | | | | | |
| | 73 | | | | | | | |
| | 62 | | | | | | | |
| 36 | 36 | S-11 | 24/6 | 44-46 | 10-11 | Medium dense, brown/gray, fine to coarse SAND, trace (+) Silt, trace fine to coarse Gravel | 9 | SAND and GRAVEL |
| | 39 | | | | 10-14 | | | |
| | 45 | | | | | | | |
| | 33 | | | | | | | |
| | 34 | | | | | | | |
| 50 | | S-12 | 24/8 | 49-51 | 11-30 | Very dense, gray, fine to coarse GRAVEL, trace (+) fine to coarse Sand, trace (+) Silt | 10 | |
| | | | | | 66-90 | | | |
| End of Exploration at ±51' | | | | | | | | |

| | | | |
|-------|---|---|---|
| | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: 7. Casing driven to 34' cleaned to 34' then S-9 (34-36') taken. 8. Casing driven to 39', cleaned to 39' through S-10 (39-41') taken. 9. Casing driven to 44', cleaned to 44' then S-11 (44-46') taken. 10. Casing driven to 49', cleaned to 49' then S-12 (49-51') taken. |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF |
| 30-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

NOTES:

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| | |
|---|--|
| BORING CO. <u>New Hampshire Boring</u> OREMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Daniel Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>15 ft</u> DATUM <u>MLLW</u> DATE START <u>04/21/05</u> DATE END <u>04/22/05</u> |
|---|--|

| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05/20/05</td> <td></td> <td>11.62</td> <td>Well</td> <td>29 Days</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05/20/05 | | 11.62 | Well | 29 Days | | | | | | | | | | |
|--|---|-------|--------|--------------------|--------|--------------------|----------|--|-------|------|---------|--|--|--|--|--|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| 05/20/05 | | 11.62 | Well | 29 Days | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|---------------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | | | |
| | 115 | S-1 | 24/12 | 4-6 | 11-29 | Very dense, green/brown/red, fine to coarse SAND, little fine to coarse Gravel, trace (+) Silt | 1 | SAND AND GRAVEL (FILL) |
| | 69 | | | | 25-26 | | | |
| | 67 | S-2 | 24/18 | 6-8 | 42-28 | Very dense, brown/red/green, fine to coarse SAND, little fine to coarse Gravel, trace (+) Silt | 2 | |
| | 63 | | | | 24-28 | | | |
| | 14 | S-3 | 24/13 | 8-10 | 17-20 | Dense, brown, fine to coarse SAND, some fine to coarse Gravel, trace Silt | 2 | |
| | 18 | | | | 21-22 | | | |
| 10 | 18 | S-4A | 24/18 | 10-12 | 15-16 | S-4A: (top 6") Dense, brown, fine to coarse SAND, little fine to coarse Gravel, trace (+) Silt | ±11' | |
| | 32 | S-4B | | | 18-22 | | | |
| | 47 | S-5 | 24/24 | 12-14 | 34-33 | S-4B: (bottom 12") Dense, brown SILT | ±12' | SILT |
| | 32 | | | | 26-27 | | | |
| 15 | 24 | S-6A | 24/18 | 14-16 | 14-20 | S-5: Very dense, brown/gray, fine to coarse SAND, little (+) fine to coarse Gravel, trace (+) Silt (Petro Odor) | 4 | SILTY SAND |
| | 36 | S-6B | | | 18-18 | | | |
| | 45 | S-7A | 24/14 | 16-18 | 25-22 | S-6A: (top 6") Dense, brown/gray, fine to coarse SAND, little (+) fine to coarse Gravel, little (-) Silt | 4 | |
| | 44 | S-7B | | | 12-21 | | | |
| | 31 | S-8 | 24/16 | 18-20 | 16-16 | S-6B: (bottom 12") Dense, brown SILT, some (+) fine to coarse Sand, trace (-) fine Gravel | 4 | |
| 0 | 30 | | | | 37-35 | | | |
| | 30 | | | | | S-7A: (top 10") Dense, brown, fine to coarse SAND, little fine Gravel, little Silt | ±22' | |
| | 60 | | | | | | | |
| | 48 | | | | | S-7B: (bottom 4") Dense, brown SILT and fine Sand | 5 | SILT |
| 25 | 50 | S-9 | 24/18 | 24-26 | 11-13 | | | |
| | 58 | | | | 14-14 | S-8: Very dense, brown/gray, fine SAND, some (+) Silt, trace (-) fine Gravel (Boulder Chip) | ±27.5' | |
| | 83 | | | | | | | |
| | 78 | | | | | S-9: Medium dense, brown SILT, little fine Sand | 5 | |
| | 61 | | | | | | | |
| 0 | 26 | S-10 | 24/16 | 29-31 | 14-16 | S-10: Dense, brown, fine to coarse SAND, little (-) Silt, trace (+) fine to coarse Gravel | 6 | SAND |
| | 40 | | | | 20-14 | | | |
| | 27 | | | | | | | |
| | 24 | | | | | | | |
| | 45 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. S-1 (4-6) and S-2 (6-8) taken (open hole) in vacuum excavation |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 8', cleaned to 8', through S-3 (8-10') and S-4 (10-12') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing driven to 14', cleaned to 14', then S-5 (14-16') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 18', cleaned to 18', then S-6 (18-20') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 24', cleaned to 24', then S-7 (24-26') taken. Silt noted in wash water at 22' |
| | >30 HARD | 6. Casing driven to 29', cleaned to 29', then S-8 (29-31') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 46 | S-11 | 24/14 | 34-36 | 9-18 | Dense, brown, fine to coarse SAND, little (+) fine to coarse Gravel, trace (+) Silt | 7 | SAND |
| | 50 | | | | 22-20 | | | |
| | 64 | | | | | | | |
| | 52 | | | | | | | |
| | 59 | | | | | | | |
| 40 | 57 | S-12 | 24/15 | 39-41 | 14-22 | Dense, brown/red, fine to coarse SAND, little (-) fine to coarse Gravel, trace (+) Silt | 8 | |
| | 73 | | | | 21-18 | | | |
| | 75 | | | | | | | |
| | 83 | | | | | | | |
| | 89 | | | | | | | |
| 45 | 66 | S-13 | 24/17 | 44-46 | 22-25 | Dense, brown/red/gray, fine to coarse SAND, some (-) fine to coarse Gravel, little (-) Silt | 9 | |
| | 58 | | | | 21-16 | | | |
| | 52 | | | | | | | |
| | 40 | | | | | | | |
| | 44 | | | | | | | |
| 50 | | S-14A | 24/12 | 49-51 | 10-13 | S-14A: (top 6") Medium dense, gray, fine to coarse SAND, some (+) Silt, little fine Gravel | 10 | ±50' |
| | | S-14B | | | 14-13 | | | |
| End of Exploration at ±51' | | | | | | | | |
| 55 | | | | | | | | |
| 60 | | | | | | | | |
| 65 | | | | | | | | |
| 70 | | | | | | | | |
| 75 | | | | | | | | |

| | | | |
|-------|---|---|-----------------|
| | GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF |
| 0-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

7. Casing driven to 34' cleaned to 34' then S-9 (34-36') taken.
 8. Casing driven to 39', cleaned to 39' through S-10 (39-41') taken.
 9. Casing driven to 44', cleaned to 44' then S-11 (44-46') taken.
 10. Casing driven to 49', cleaned to 49' then S-12 (49-51') taken.
 11. Groundwater monitoring well installed; screened from 15-5', riser from 5' to 0, guard pipe to ±2.5'. Filter sand from 42-4'. Bentonite seal from 4' to 3', drill cuttings from 3' to 0'. Capped off with guard pipe and cement.

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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BORING NO. GZ-209(OW)

| | |
|--|--|
| BORING CO. <u>New Hampshire Boring</u> OPERMAN <u>Charlie O'Donnell</u> GZA ENG. <u>Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>15.5 ft</u> DATUM <u>MLLW</u> DATE START <u>04/18/05</u> DATE END <u>04/21/05</u> |
|--|--|

| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>04/19/05</td> <td>0730</td> <td>7.9'</td> <td>19.0</td> <td>17 Hours</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 04/19/05 | 0730 | 7.9' | 19.0 | 17 Hours | | | | | | | | | | |
|--|---|-------|--------|--------------------|--------|--------------------|----------|------|------|------|----------|--|--|--|--|--|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| 04/19/05 | 0730 | 7.9' | 19.0 | 17 Hours | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|----------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | | SAND (FILL) | |
| | 13 | S-1 | 24/12 | 4-6 | 5-11 | Medium dense, blue/brown, fine to medium SAND, trace (+) | 1 | |
| | 10 | | | | 14-17 | Silt | | |
| | 23 | S-2 | 24/18 | 6-8 | 21-17 | Dense, blue, red, green, fine to medium SAND< trace Silt, | | |
| | 25 | | | | 17-16 | trace (-) fine Gravel | | |
| | 4 | S-3 | 24/8 | 8-10 | 11-12 | Medium dense, tan/brown, fine to coarse SAND, trace (+) | 2 | |
| | 12 | | | | 9-9 | fine Gravel, trace Silt | | |
| | 18 | S-4A | 24/18 | 10-12 | 13-13 | S-4A: (top 12") Medium dense, black/brown, fine to coarse SAND, | | |
| | 30 | S-4B | | | 12-12 | trace (+) fine to coarse Gravel, trace Silt (Petro Odor) | | |
| | 32 | S-5A | 24/16 | 12-14 | 20-19 | S-4B: (bottom 6") Medium dense, brown SILT, trace (-) fine Sand | | |
| | 29 | S-5B | | | 23-25 | S-5A: (top 13") Medium dense, brown/black, fine to coarse SAND, | | ±14' |
| | 19 | S-6 | 24/16 | 14-16 | 9-15 | trace fine Gravel, trace Silt (Petro Odor) | 3 | |
| | 29 | | | | 17-19 | S-5B: (bottom 3") Medium dense, brown SILT, trace fine Sand | | |
| | 29 | S-7 | 24/14 | 16-18 | 14-11 | S-6: Dense, black/brown SILT, some fine to coarse Gravel, | | SILT |
| | 32 | | | | 12-12 | trace fine Sand | | |
| | 33 | | | | | S-7: Medium dense, brown SILT | | |
| | 35 | S-8A | 24/18 | 19-21 | 12-18 | S-8A: (top 9") Medium dense, brown SILT | 4 | ±20' |
| | 29 | S-8B | | | 11-12 | S-8B: (bottom 9") Medium dense, brown, fine to coarse SAND, | | |
| | 37 | | | | | trace (+) Silt | | |
| | 43 | | | | | | | |
| | 39 | | | | | | | SAND |
| | 23 | S-9 | 24/12 | 24-26 | 7-12 | Medium dense, brown, fine to coarse SAND, little (-) Silt, trace | 5 | |
| | 25 | | | | 13-13 | (-) fine Gravel | | |
| | 24 | | | | | | | |
| | 23 | | | | | | | |
| | 49 | | | | | | | |
| | 26 | S-10 | 24/14 | 29-31 | 10-9 | Medium dense, brown, fine to coarse SAND, little (-) Silt, trace | 6 | |
| | 26 | | | | 11-10 | (-) fine Gravel | | |
| | 21 | | | | | | | |
| | 24 | | | | | | | ±32.5' |
| | 25 | | | | | | | SILT |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. S-1 (4-6) and S-2 (6-8) taken (open hole) in vacuum excavation |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 8', cleaned to 8', through S-3 (8-10') and S-4 (10-12') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing driven to 14', cleaned to 14', then S-5 (14-16') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 19', cleaned to 19', then S-6 (19-21') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 24', cleaned to 24', then S-7 (24-26') taken. Silt noted in wash water at 22' |
| | >30 HARD | 6. Casing driven to 29', cleaned to 29', then S-8 (29-31') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 44 | S-11 | 24/12 | 34-36 | 10-10 | Medium dense, brown/red SILT, trace (-) fine Sand | 7 | SILT |
| | 45 | | | | 14-17 | | | |
| | 54 | | | | | | | |
| | 52 | | | | | | | |
| | 59 | | | | | | | |
| 0 | 56 | S-12 | 24/12 | 39-41 | 9-11 | Medium dense, brown SILT, trace (+) fine to coarse Sand | 8 | SILT |
| | 63 | | | | 16-14 | | | |
| | 72 | | | | | | | |
| | 83 | | | | | | | |
| | 64 | | | | | | | |
| 5 | 55 | S-13 | 24/10 | 44-46 | 10-9 | Medium dense, brown/gray, fine to coarse SAND, little (-) | 9 | SAND |
| | 48 | | | | 10-11 | Silt, trace (+) fine Gravel | | |
| | 51 | | | | | | | |
| | 40 | | | | | | | |
| | 31 | | | | | | | |
| 50 | 29 | S-14A | 24/12 | 49-51 | 8-10 | S-14A: (top 10") Medium dense, gray, fine to coarse SAND, | 10 | SILT |
| | 30 | S-14B | | | 9-6 | little (-) Silt, trace (+) fine Gravel | | |
| | 59 | | | | | S-14B: (bottom 2") Medium dense, gray SILT | | |
| | 47 | | | | | | | |
| | 66 | | | | | | | |
| 5 | 67 | S-15A | 24/16 | 54-56 | 8-7 | S-15A: (top 4) Medium dense, gray SILT | 11 | SAND |
| | 58 | S-15B | | | 7-5 | S-15B: (bottom 12") Medium dense, gray, fine to coarse SAND, | | |
| | 44 | | | | | little fine Gravel, trace (+) Silt | | |
| | 45 | | | | | | | |
| | 69 | | | | | | | |
| 60 | 71 | S-16 | 24/12 | 59-61 | 8-5 | Loose, gray SILT | 12 | SILT |
| | 67 | | | | 4-6 | | | |
| | 73 | | | | | | | |
| | 57 | | | | | | | |
| | 54 | | | | | | | |
| 65 | S | S-17 | 24/14 | 64-66 | 8-6 | Medium dense, gray SILT, some (-) fine Sand | 13 | SILT |
| | S | | | | 8-11 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 0 | S | S-18 | 24/14 | 69-71 | 28-27 | Very dense, gray, fine to coarse SAND, some fine to coarse | 14 | SAND AND GRAVEL |
| | S | | | | 27-22 | Gravel, trace (-) Silt | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 75 | S | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: | |
|------------------------------------|------------------------------------|--|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | 7. Casing driven to 34' cleaned to 34' then S-11 (34-36') taken. | 14. Casing driven to 69', cleaned to 69' then S-18 (69-71') taken. |
| 4-10 LOOSE | 2-4 SOFT | 8. Casing driven to 39', cleaned to 39' then S-12 (39-41') taken. | 15 Washed ahead to 74' |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 9. Casing driven to 44', cleaned to 44' then S-13 (44-46') taken. | |
| 0-50 DENSE | 8-15 STIFF | 10. Casing driven to 49', cleaned 49' then S-14 (49-51') taken. | |
| >50 VERY DENSE | 15-30 V. STIFF | 11. Casing driven to 54', cleaned to 54' then S-15 (54-56') taken. | |
| | >30 HARD | 12. Casing driven to 59', cleaned to 59' then S-16 (59-61') taken. | |
| | | 13. Casing driven to 64', cleaned to 64' then S-17 (64-66') taken. | |

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BORING NO. GZ-210

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | S | S-19 | 24/18 | 74-76 | 35-48 | Very dense, gray, fine to coarse SAND, little (+) fine Gravel, little (-) Silt | 16 | SAND AND GRAVEL |
| | S | | | | 51-39 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 85 | S | S-20 | 24/16 | 79-81 | 24-30 | Very dense, gray SILT | 17 | SILT |
| | S | | | | 34-39 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 95 | S | S-21 | 24/12 | 84-86 | 17-18 | Dense, gray, fine SAND, some Silt | 18 | SAND |
| | S | | | | 29-31 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-22 | 24/16 | 89-91 | 30-36 | Very dense, gray, fine SAND, some (+) Silt | 19 | SAND |
| | S | | | | 46-31 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 100 | S | S-23 | 24/18 | 94-96 | 43-48 | Very dense, gray, fine SAND, little (+) Silt | 20 | SAND |
| | S | | | | 57-53 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 105 | S | S-24 | 24/20 | 99-101 | 28-36 | Very dense, gray, fine to medium SAND, little (-) Silt | 21 | SAND |
| | S | | | | 38-33 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 110 | S | S-25 | 24/19 | 104-106 | 43-50 | Very dense, grey, fine to medium SAND, trace (+) Silt | 22 | SAND |
| | S | | | | 47-41 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 115 | S | S-26 | 24/15 | 109-111 | 29-31 | Very dense, gray, fine to medium SAND, trace (+) SILT | 23 | SAND |
| | S | | | | 38-47 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |

| | | | | | |
|-------------------|------------------|--|--|---|--|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: | | | |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | | | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 16. Begin telescoping 3" NW casing in side 4" HW, lower to 74', then take S-19 (74-76) | 17. Wash ahead to 79', spin 3"NW to 79" and take S-20 (79-81) | 23. Wash ahead to 109', spin 3"NW to 109" and take S-26 (109-111) | |
| 4-10 LOOSE | 2-4 SOFT | 18. Wash ahead to 84', spin 3"NW to 84" and take S-21 (84-86) | 19. Wash ahead to 89', spin 3"NW to 89" and take S-22 (89-91) | 24. Wash ahead to 114', spin 3"NW to 114" and take S-27 (114-116) | |
| 1-30 MEDIUM DENSE | 4-8 M. STIFF | 20. Wash ahead to 94', spin 3"NW to 94" and take S-23 (94-96) | 21. Wash ahead to 99', spin 3"NW to 99" and take S-24 (99-101) | 25. Wash ahead to 119', spin 3"NW to 119" and take S-26 (119-121) | |
| 1-50 DENSE | 8-15 STIFF | 22. Wash ahead to 104', spin 3"NW to 104" and take S-25 (104-106) | | | |
| >50 VERY DENSE | 15-30 V. STIFF | | | | |
| | >30 HARD | | | | |

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| | | |
|--|--|---------------------------------------|
| GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG | PROJECT Keyspan LNG Facility Providence, Rhode Island | REPORT OF BORING NO. GZ-211 |
| | | SHEET 1 of 2 |
| | | FILE NO. 32784.01 |
| | | CHKD BY AH |

| | |
|---|---|
| BORING CO. New Hampshire Boring | BORING LOCATION See Exploration Location Plan |
| OPERMAN Charlie O'Donnel | GROUND SURFACE ELEV. 10 ft |
| GZA ENG. Daniel Oaks | DATE START 05-02-05 |
| | DATE END 05-03-05 |

| | |
|--|--|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | GROUNDWATER READINGS |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | DATE TIME WATER CASING STABILIZATION TIME |
| CASING SIZE: 4" HW OTHER: | 5/3/05 0700 1.8' 18' 16 Hours |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 24/10 | 0-2 | 3-6 | Medium dense, brown fine to coarse SAND, some fine to | | |
| | 66 | | | | 19-23 | coarse Gravel, trace Silt | | |
| | 73 | S-2 | 24/8 | 2-4 | 11-12 | Medium dense, brown fine to coarse SAND, little Silt | | SAND |
| | 20 | | | | 17-22 | little fine Gravel | | (FILL) |
| | 10 | S-3 | 24/0 | 4-6 | 29-16 | NO RECOVERY | | |
| | 10 | | | | 8-4 | | | |
| | 9 | S-4 | 24/10 | 6-8 | 3-2 | Loose, brown, fine to coarse SAND, little fine Gravel, little Silt | | |
| | 10 | | | | 3-4 | | | |
| | 9 | S-5A | 24/16 | 8-10 | 11-4 | S-5A: (top 4") Loose, gray/brown, fine to coarse SAND, some Silt, | 2 | ±9' |
| | 16 | S-5B | | | 4-3 | trace fine Gravel | | |
| | 4 | UP-1 | 6/0 | 10-10.6 | PUSH | S-5B: (bottom 12") Loose, gray/black, FIBROUS PEAT | 3 | FIBROUS PEAT |
| | 4 | S-6 | 18/0 | 10.6-12 | 45-39-29 | UP-1: Shelby Tube sampling, NO RECOVERY | | ±12' |
| | 36 | S-7 | 24/8 | 12-14 | 12-12 | S-6: NO RECOVERY | | |
| | 65 | | | | 16-15 | S-7: Medium dense, gray, fine to coarse Sand, trace (+) Silt | | SAND |
| | 9 | S-8A | 24/14 | 14-16 | 22-11 | (top 7") Medium dense, gray, fine to medium SAND, little (+) Silt | 4 | ±14.5' |
| | 6 | S-8B | | | 7-4 | (bottom 7") Medium dense, gray, organic SILT, little fine Sand | | |
| | 12 | UP-2 | 24/0 | 16-18 | Push | UP-2: Shelby Tube sampling, NO RECOVERY | 5 | ORGANIC |
| | 9 | S-9 | 24/10 | 16-18 | N/A | Gray, organic SILT, little fine Sand, trace fine Gravel | | SILT |
| | 14 | UP-3 | 24/0 | 18-20 | Push | UP-3: Shelby Tube sampling, NO RECOVERY | 6 | |
| | 14 | S-10 | 24/4 | 18-20 | N/A | Gray, organic SILT, little fine Sand, trace fine Gravel | | |
| | 16 | S-11 | 24/18 | 20-22 | 4-2 | Medium stiff, gray, organic SILT, trace fine Sand, trace fine Gravel, | 7 | |
| | 15 | | | | 2-2 | trace Shells | | |
| | 15 | S-12 | 24/24 | 22-24 | 4-3 | Medium stiff, gray, organic SILT, trace fine Sand, trace fine Gravel, | 8 | |
| | 14 | | | | 3-3 | trace Shells | | |
| | 25 | UP-4 | 24/0 | 24-26 | Push | UP-4: Shelby Tube sampling, NO RECOVERY | | |
| | 18 | S-13 | 24/12 | 24-26 | N/A | Gray, organic SILT, trace Twig, trace fine Sand | 9 | |
| | 19 | S-14 | 24/14 | 26-28 | 4-3 | Medium stiff, gray, organic SILT, trace Fibrous Peat, trace fine Gravel, | | |
| | 27 | | | | 5-7 | trace fine Sand | | ±28' |
| | 69 | S-15 | 24/12 | 28-30 | 12-19 | Dense, gray, fine to medium SAND, some fine to coarse Gravel, | 10 | SAND |
| | 57 | | | | 24-24 | little (+) Silt | | |
| | 47 | S-16 | 24/10 | 30-32 | 16-11 | Medium dense, gray, fine to coarse SAND, some (-) fine to | 11 | |
| | 39 | | | | 13-11 | coarse Gravel, trace (+) Silt | | |
| | 36 | | | | | | | |
| | 38 | | | | | | | |

| | | |
|---|---|--|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Casing driven to 4'. Cleaned to 4', then S-3 (4-6') and S-4 (6-8) taken. |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 8'. Cleaned to 8', then S-5 (8-10') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing driven to 10'. Cleaned to 10', then UP-1 (10-12') and S-6 taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 14'. Cleaned to 14', then S-8 (14-16') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 16'. Cleaned to 16', then UP-2 and S-9 taken (16-18') and S-9 taken. |
| | >30 HARD | 6. Casing driven to 18'. Cleaned to 18', then UP-3 the S-10 taken. |
| | | 7. Casing driven to 20'. Cleaned to 20', then S-11 (20-22') taken. |
| | | 8. Casing driven to 22'. Cleaned to 22' then S-12 (22-24') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|---------|------------|----------|---|--------|------------------------|
| | | NO | PEN/REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 34 | S-17 | 24/8 | 34-36 | 13-15 | Dense, gray, fine to coarse SAND, little (+) fine to coarse | 12 | SAND |
| | 37 | | | | 16-15 | Gravel, trace (+) Silt | | |
| | 40 | | | | | | | |
| | 35 | | | | | | | |
| | 35 | | | | | | | |
| 0 | 24 | S-18 | 24/7 | 39-41 | 10-15 | Medium dense, gray/brown, fine to coarse SAND, little (-) | 13 | |
| | 32 | | | | 14-22 | fine Gravel, trace Silt | | |
| | 42 | | | | | | | |
| | 48 | | | | | | | |
| | 56 | | | | | | | |
| 5 | 24 | S-19 | 24/13 | 44-46 | 8-10 | Medium dense, gray, fine to coarse SAND, trace (+) Silt | 14 | |
| | 18 | | | | 10-11 | | | |
| | 23 | | | | | | | |
| | 35 | | | | | | | |
| | 49 | | | | | | | |
| 50 | | S-20 | 24/ | 49-51 | 16-21 | Dense, brown SILT | 15 | SILT |
| | | | | | 27-17 | | | |
| End of Exploration at ±51' | | | | | | | | |
| 5 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 60 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 65 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 0 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 75 | | | | | | 8. Casing driven to 22', cleanout to 22', then S-12 (22-24') taken. | | |

| GRANULAR SOILS | COHESIVE SOILS | REMARKS: |
|-------------------|------------------|---|
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 9. Casing driven to 24', cleaned to 24', then UP-4 (24-26') taken. |
| 4-10 LOOSE | 2-4 SOFT | 10. Casing driven to 28', cleaned to 28' then S-15 (28-30') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 11. Casing driven to 30', cleaned to 30', then S-16 (30-32') taken. |
| 10-50 DENSE | 8-15 STIFF | 12. Casing drive to 34', cleaned to 34' then S-17 (34-36') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 13. Drive casing to 39', cleaned to 39', then S-18 (39-41') taken. |
| | >30 HARD | 14. Drive casing to 44', cleaned to 44' then S-19 (44-46') taken. |
| | | 15. Drive casing to 49', cleaned out 49' then S-20 (49-51') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| | |
|---|--|
| DRILLING CO. <u>New Hampshire Boring</u> OPERATOR <u>Charlie O'Donnell</u> GZA ENG. <u>Joanne Kissinger</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>11 ft</u> DATUM <u>MLLW</u> DATE START <u>05/04/05</u> DATE END <u>05/05/05</u> |
|---|--|

AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE: 5" / 4" / 3" OTHER:

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|-------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 12/6" | 0-1 | 7-120/6" | Very Dense, light brown, fine to medium SAND, trace Silt | 1 | ±1' FILL |
| | 5 | | | | | | | |
| | WOC | C-1 | 24/8 | 2-4 | 9 min/ft | CORED THROUGH CONCRETE | 2 | ±3' CONCRETE |
| | WOC | | | | 1 min/ft | | | |
| | 2 | S-2 | 24/4 | 4-6 | 1-1 | Very loose, light brown, fine to medium SAND, trace Silt | 3 | |
| | 4 | | | | 1-2 | | | |
| | 5 | S-3 | 24/5 | 6-8 | 2-1 | Very loose, gray (oil-type stain), fine to medium SAND, trace Silt | 4 | FILL |
| | 4 | | | | 1-2 | | | |
| 10 | 14 | S-4 | 24/1 | 8-10 | 8-6 | Loose, gray (oil-type stain), fine GRAVEL, some fine to medium Sand, trace Silt | 5 | |
| | 17 | | | | 1-2 | | | |
| | 11 | S-5 | 24/5 | 10-12 | 11-4 | Loose, gray (oil-type stain), fine to medium SAND, little Silt, trace Wood Chips | 6 | |
| | 27 | | | | 3-5 | | | |
| | 17 | S-6 | 24/12 | 12-14 | 10-9 | Medium dense, gray (oil-type stain), fine to medium SAND, little fine Gravel, little Silt | 7 | |
| | 19 | | | | 17-10 | | | |
| 15 | 11 | S-7 | 24/8 | 14-16 | 2-1 | Medium dense, gray, fine to coarse SAND, little Silt | 8 | |
| | 21 | | | | 9-16 | | | |
| | 35 | S-8 | 24/10 | 16-18 | 15-32 | Dense, gray, fine to coarse SAND, little Silt, trace fine Gravel | 9 | |
| | 29 | | | | 12-8 | | | |
| 20 | 15 | S-9 | 24/8 | 18-20 | 8-8 | Medium dense, gray, fine to coarse SAND, little Silt, trace fine Gravel, trace Organics in tip of Spoon | 10 | |
| | 16 | | | | 6-3 | | | ±20' |
| | 12 | S-10A | 24/13 | 20-22 | 2-3 | S-10A: (Top 8"): Loose, grayish-brown, fine to medium SAND, trace Organics, trace Silt | 11 | SAND |
| | 12 | S-10B | | | 3-7 | | | ±21.5' (TRACE ORGANICS) |
| | 13 | S-11 | 24/12 | 22-24 | 7-5 | S-10B: (Bottom 5"): Loose, grayish-brown, fine to medium SAND, trace Silt | 12 | |
| | 15 | | | | 7-5 | | | |
| 25 | 23 | S-12 | 24/9 | 24-26 | 6-6 | S-11: Medium dense, grayish-brown, fine to medium SAND, trace Silt | 13 | SAND |
| | 43 | | | | 7-7 | | | |
| | 36 | | | | | S-12: Medium dense, brown, fine to coarse SAND, trace fine Gravel, trace Silt | | |
| | 35 | | | | | | | |
| | 43 | | | | | | | |
| 30 | 46 | S-13 | 24/12 | 29-31 | 14-12 | Medium dense, brown, fine to coarse SAND, little fine Gravel, little Silt | | |
| | 40 | | | | 12-12 | | | |
| | 52 | | | | | | | |
| | 65 | | | | | | | |
| | 46 | | | | | | | ±34.2' |
| | 39 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|----------|
| 0-4 VERY LOOSE | <2 VERY SOFT | |
| 4-10 LOOSE | 2-4 SOFT | |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | |
| 0-50 DENSE | 8-15 STIFF | |
| >50 VERY DENSE | 15-30 V. STIFF | |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 39 | S-14 | 24/7 | 34-36 | 14-14 | (Top 2"): Dense, gray, fine to coarse SAND, little Silt | 14 | SAND |
| | 33 | | | | 18-14 | (Bottom 5"): Dense, brown, fine to medium SAND, | | |
| | 51 | | | | | some Silt, trace fine Gravel | | |
| | 60 | | | | | | | |
| | 47 | | | | | | | |
| 40 | 48 | S-15 | 24/12 | 39-41 | 20-23 | Very dense, grayish-brown, fine to coarse (-) SAND, some Silt | 15 | SAND |
| | 87 | | | | 36-22 | | | |
| | 69 | | | | | | | |
| | 62 | | | | | | | |
| | 62 | | | | | | | |
| 45 | 35 | S-16 | 24/12 | 44-46 | 12-8 | (Top 6"): Medium dense, grayish-brown, fine to coarse (-) SAND, | 16 | SAND |
| | 44 | | | | 10-12 | some Silt | | |
| | 31 | | | | | (Bottom 6"): Medium dense, grayish-brown, fine to medium SAND, | | |
| | 79 | | | | | trace Silt | | |
| | 58 | | | | | | | |
| 50 | | S-17 | 24/7 | 49-51 | 8-8 | Medium dense, grayish-brown, fine to medium SAND, trace | 17 | SAND |
| | | | | | 19-18 | Silt (1" Layer of gray, fine to medium Sand, some Silt) | | |
| | | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 55 | S | S-18 | 24/12 | 54-56 | 42-21 | Very dense, grayish-brown, fine to coarse SAND, some Silt, | 18 | SAND |
| | S | | | | 40-30 | trace fine Gravel (2" Layer of grayish-brown, fine to medium | | |
| | S | | | | | Sand, trace Silt) | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 60 | S | S-19 | 24/10 | 59-61 | 19-15 | (Top 4"): Medium dense, grayish-brown, fine to coarse SAND, | 19 | SAND |
| | S | | | | 9-13 | little Silt, trace fine Gravel | | |
| | S | | | | | (Bottom 6"): Medium dense, grayish-brown, fine to medium SAND, | | |
| | S | | | | | trace Silt | | |
| | S | | | | | | | |
| 65 | S | S-20 | 24/12 | 64-66 | 22-18 | Dense, brownish-gray, fine to medium SAND, little fine Gravel, | 20 | SAND |
| | S | | | | 13-19 | little Silt | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 70 | S | S-21 | 24/12 | 69-71 | 34-35 | Very dense, brownish-gray, fine to medium SAND, trace Silt | 21 | SAND |
| | S | | | | 57-42 | (1" Layers of fine to coarse (-) Sand, little fine Gravel, little | | |
| | S | | | | | Silt) | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 75 | S | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 10. Took sample S-9, installed casing to 20' & wash-out. |
| 4-10 LOOSE | 2-4 SOFT | 11. Took sample S-11, installed casing to 24'. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 12. Washed to 24', collected Sample S-12 (Bag Sample) |
| 0-50 DENSE | 8-15 STIFF | 13. Installed casing to 29' & washed out, collected sample S-13 (Bag Sample) |
| >50 VERY DENSE | 15-30 V. STIFF | 14. Installed casing to 34' & washed out, collected sample S-14 (No Bag Sample) |
| | >30 HARD | 15. Installed casing to 39' & wash-out. Collected sample S-15 (Bag Sample) |
| | | 16. Installed casing to 44' & washed out. Collected sample S-16 (No Bag Sample) |

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| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 75 | S | S-22 | 24/8 | 74-76 | 27-28 | Very dense, dark gray, fine to coarse SAND, little Silt, trace fine Gravel | 23 | |
| | S | | | | 33-27 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 80 | S | S-23 | 24/12 | 79-81 | 37-51 | Very dense, dark gray, fine to coarse SAND< some fine Gravel, little Silt | 24 | |
| | S | | | | 38-40 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 85 | S | S-24 | 24/7 | 84-86 | 30-31 | Very dense, dark gray, fine to coarse SAND, some fine Gravel, little Silt | 25 | |
| | S | | | | 28-24 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 90 | S | S-25 | 24/4 | 89-91 | 39-27 | Very dense, dark gray, fine to coarse SAND, some fine Gravel, little Silt | 26 | |
| | S | | | | 31-42 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 95 | S | S-26 | 24/6 | 94-96 | 22-24 | Very dense, brownish-gray, fine to medium SAND, trace fine Gravel, trace Silt | 27 | SAND |
| | S | | | | 35-27 | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| | S | | | | | | | |
| 100 | S | S-27 | 24/8 | 99-101 | 31-43 | Very dense, gray, fine to coarse SAND, some Silt, little fine Gravel. | 28 | GLACIAL TILL |
| | S | | | | 44-37 | | | |
| | | | | | | | | |
| End of Exploration at ±101' | | | | | | | | |
| 105 | | | | | | 17. Casing installed to 49' & washed out. Collect sample S-17 (No Bag Sample) | | |
| | | | | | | 18. Open hole with mud to S-3 (Bag Sample) due to sands. Gravel encountered, 3" casing spun to 54', Collect Sample S-18 (Bag Sample) | | |
| | | | | | | 19. Rollerbit to 59', possible cobbles encountered, spin casing to 59' & washed out. Collect Sample S-19 (No Bag Sample). | | |
| | | | | | | 20. Rollerbit ahead to 64', spin casing to 64' & washed out. Rig shaking and grinding, possible cobbles encountered. Collected Sample S-20. (Bag Sample) | | |
| | | | | | | 21. Rollerbit ahead to 69'. Spin casing to 69'. | | |
| 115 | | | | | | 22. Washed out & collected sample S-214 (Bag Sample). | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
|------------------------------------|--------------|------------------------------------|-----------|---|
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | 24. Rollerbit ahead to 79', installed casing to 79' and washed out. Collected sample S-23, rollerbit grinding and rig shaking. |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | 25. Rollerbit ahead to 84'. Rollerbit grinding, rig shaking, installed casing to 84' of wash-out. Collected sample S-24 2' blow-out into casing when spoon pulled out |
| 0-50 | DENSE | 8-15 | STIFF | 26. Rollerbit ahead to 89'. Installed casing to 89' & washed out. Collected sample S-25 (No Bag Sample). |
| >50 | VERY DENSE | 15-30 | V. STIFF | 27. Rollerbit ahead to 94', installed casing to 94' & washed out. Collected sample S-26 (No Bag Sample). |
| | | >30 | HARD | 28. Rollerbit ahead to 99'. Rollerbit grinding. Installed casing to 99' & washed out. Collected sample S-27 (Bag Sample). |

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| | | | |
|--|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND GEO/TECH/GEOHYDROLOGICAL CONSULTANTS GEO TECHNICAL BORING LOG | PROJECT | REPORT OF BORING NO. | GZ-213 |
| | Keyspan LNG Facility | SHEET | 1 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| | | | |
|------------|----------------------|----------------------|-------------------------------|
| BORING CO. | New Hampshire Boring | BORING LOCATION | See Exploration Location Plan |
| BOREMAN | Charlie O'Donnel | GROUND SURFACE ELEV. | 12 ft |
| GZA ENG. | Daniel E. Oaks | DATUM | MLLW |
| | | DATE START | 04-28-05 |
| | | DATE END | 04-29-05 |

| | | | | | |
|--|----------------------|------|-------|--------|--------------------|
| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF .2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN | GROUNDWATER READINGS | | | | |
| CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. | DATE | TIME | WATER | CASING | STABILIZATION TIME |
| CASING SIZE: 4" HW OTHER: | 04-29-05 | 0730 | 4.31 | 49' | 17 Hours |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|---|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 24/12 | 0-2 | 3-5 | Medium dense, brown, fine to coarse SAND, little fine to coarse | | SAND (FILL) |
| | P | | | | 9-11 | Gravel, trace (+) Silt | | |
| | 20 | S-2 | 24/14 | 2-4 | 10-13 | Dense, brown, fine to coarse SAND, little (+) fine to coarse | | |
| | 24 | | | | 21-19 | Gravel, trace (+) Silt | | |
| | 24 | S-3 | 24/6 | 4-6 | 15-11 | Medium dense, brown, fine to coarse SAND, little (+) fine to | 1 | |
| | 33 | | | | 11-14 | coarse Gravel, trace (+) Silt | | |
| | 27 | S-4 | 24/20 | 6-8 | 15-20 | Dense, brown, fine to coarse SAND, little fine to coarse Gravel, | | |
| | 26 | | | | 21-27 | trace (+) Silt | | |
| | 32 | S-5 | 24/10 | 8-10 | 20-16 | Dense, brown, fine to coarse SAND, little (+) fine to coarse | 2 | |
| 10 | 45 | | | | 15-19 | Gravel, trace (+) Silt | | |
| | 24 | S-6 | 24/12 | 10-12 | 16-11 | Medium dense, brown, fine to coarse SAND, little (+) fine to coarse | 3 | |
| | 24 | | | | 17-22 | Gravel, trace (+) Silt | | |
| | 22 | S-7 | 24/14 | 12-14 | 12-14 | Medium dense, gray/brown, fine to coarse SAND, little (+) fine | | |
| | 30 | | | | 12-15 | to coarse Gravel, trace Silt (Slightly Petro Odor) | | |
| 15 | 26 | S-8 | 24/10 | 14-16 | 11-15 | Dense, gray/brown, fine to coarse SAND, some (-) fine to coarse | 4 | |
| | 53 | | | | 20-19 | Gravel, trace (-) Silt (Petro Odor) | | |
| | 65 | S-9 | 24/18 | 16-18 | 28-27 | Dense, brown, fine to coarse SAND, some (-) fine to coarse | | |
| | 60 | | | | 21-24 | Gravel, trace (+) Silt | | |
| | 30 | S-10 | 24/10 | 18-20 | 13-17 | Dense, gray, fine to coarse SAND, little (+) fine to coarse | 5 | |
| 0 | 34 | | | | 22-19 | Gravel, trace (+) Silt | | |
| | 40 | S-11 | 24/16 | 20-22 | 20-18 | Dense, brown, fine to coarse SAND, little (+) fine to coarse | | |
| | 48 | | | | 20-20 | Gravel, trace (-) Silt | | |
| | 64 | S-12 | 24/14 | 22-24 | 21-29 | Very dense, brown, fine to coarse SAND, some (-) fine to coarse | 6 | |
| | 58 | | | | 27-28 | Gravel, little (-) Silt | | |
| 25 | 20 | S-13 | 24/14 | 24-26 | 12-12 | Medium dense, brown, fine to medium SAND, trace Silt, trace (-) | 7 | |
| | 33 | | | | 12-15 | fine Gravel | | |
| | 67 | | | | | | | |
| | 61 | | | | | | | |
| | 59 | | | | | | | |
| 30 | 61 | S-14 | 24/12 | 29-31 | 7-5 | Medium dense, brown/gray, fine to coarse SAND, trace (-) Silt | 8 | |
| | 64 | | | | 5-6 | | | |
| | 64 | | | | | | | |
| | 58 | | | | | | | |
| | 55 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|--|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Casing pushed to 2' and driven to 4', cleared to 4' then S-3 (4-6') and S-4 (6-8') taken. |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 8', cleaned to 8' then S-5 (8-10') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing drive to 10', cleaned to 10' then S-6 (10-12') and S-7 (12-14') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 14', cleaned 14', then S-8 (14-16') and S-9 (16-18') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 18', cleaned to 18' then S-10 (18-20') and S-11 (20-22') taken. |
| | >30 HARD | 6. Casing driven to 22', cleaned to 22', then S-12 (22-24') taken. |
| | | 7. Casing driven to 24', cleaned to to 24' then S-13 (24-26') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 35 | S-15 | 24/12 | 34-36 | 4-4 | Loose, brown, fine to medium SAND, trace (-) Silt | 9 | SAND |
| | 31 | | | | 5-7 | | | |
| | 39 | | | | | | | |
| | 53 | | | | | | | |
| | 63 | | | | | | | |
| 0 | 57 | S-16 | 24/7 | 39-41 | 11-7 | S-16A: (top 5") Medium dense, brown/red, fine to coarse SAND, some (+) fine to coarse Gravel, trace Silt | 10 | ±40' |
| | 59 | S-16B | | | 10-8 | | | |
| | 62 | | | | | | | |
| | 71 | | | | | | | |
| | 69 | | | | | S-16B: (bottom 2") Medium dense, tan/brown SILT, little (-) fine to coarse Sand | ±42.5' | SILT |
| | 69 | | | | | | | |
| 5 | 56 | S-17 | 24/12 | 44-46 | 15-13 | Medium dense, brown, fine to coarse SAND, little (+) fine to coarse Gravel, trace (+) Silt | 11 | SAND |
| | 55 | | | | 10-11 | | | |
| | 68 | | | | | | | |
| | 114 | | | | | | | |
| | 113 | | | | | | | |
| 50 | | S-18 | 24/4 | 49-51 | 15-24 | Dense, brown, fine to coarse SAND, some (+) fine to coarse Gravel, little (+) Silt | 12 | |
| | | | | | 26-17 | | | |
| End of Exploration at ±51' | | | | | | | | |
| 5 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 60 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 65 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 0 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 75 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | |
|------------------------------------|--------------|------------------------------------|-----------|
| 0-4 | VERY LOOSE | <2 | VERY SOFT |
| 4-10 | LOOSE | 2-4 | SOFT |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF |
| 0-50 | DENSE | 8-15 | STIFF |
| >50 | VERY DENSE | 15-30 | V. STIFF |
| | | >30 | HARD |

REMARKS:
 8. Drive casing to 29', cleaned to 29' then S-14 (29-31') taken.
 9. Drive casing to 34', cleaned to 34' then S-15 (34-36') taken.
 10. Drive casing to 39', cleaned to 39', then S-16 (39-41') taken.
 11. Drive casing to 44'. Cleaned to 44' then S-17 (44-46') taken.
 12. Drive casing to 49', cleaned to 49' then S-18 (49-51') taken.

NOTES:
 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | |
|---|--|
| DRING CO. <u>New Hampshire Boring</u> CREMAN <u>Charlie O'Donnel</u> GZA ENG. <u>Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>12 ft</u> DATUM <u>MLLW</u> DATE START <u>04-29-05</u> DATE END <u>05-02-05</u> |
|---|--|

| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: 4" HW OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05-02-05</td> <td>0700</td> <td>7.9'</td> <td>33'</td> <td>64 Hours</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05-02-05 | 0700 | 7.9' | 33' | 64 Hours | | | | | | | | | | |
|--|--|-------|--------|--------------------|--------|--------------------|----------|------|------|-----|----------|--|--|--|--|--|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| 05-02-05 | 0700 | 7.9' | 33' | 64 Hours | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | S-1 | 24/18 | 0-2 | 3-8 | Medium dense, brown/tan, fine to coarse SAND, trace (+) Silt | | |
| | 22 | | | | 11-19 | | | |
| | 51 | S-2 | 24/13 | 2-4 | 16-25 | Dense, brown, fine to coarse SAND, trace (+) Silt, trace (-) fine | | |
| | 49 | | | | 22-25 | Gravel | | SAND |
| | 11 | S-3A | 24/18 | 4-6 | 9-15 | S-3A: (top 9") Dense, brown, fine to medium SAND, trace (+) Silt | 1 | (FILL) |
| | 32 | S-3B | | | 17-21 | S-3B: (bottom 9") Dense, black, fine to coarse SAND, little (+) Silt, | | |
| | 37 | S-4A | 24/24 | 6-8 | 37-36 | trace (-) fine Gravel, trace (-) Wood, Ash (Petro Odor) | | |
| | 70 | S-4B | | | 35-39 | S-4A: (top 10") Very dense, brown, fine to medium SAND, trace (+) Silt | | |
| | 32 | S-5 | 24/16 | 8-10 | 76-45 | S-4B: (Bottom 14") Very dense, black, fine to coarse SAND, little | 2 | |
| 10 | 25 | | | | 31-45 | fine Gravel, trace Silt (Petro Odor) | | |
| | 37 | S-6 | 24/18 | 10-12 | 13-19 | S-5: Very dense, black, fine to coarse SAND, little Silt, trace (+) | 3 | |
| | 64 | | | | 21-51 | fine Gravel (Petro Odor) | | |
| | 46 | S-7 | 24/16 | 12-14 | 30-28 | S-6: Dense, black, fine to coarse SAND, little (-) Silt, trace fine | 4 | |
| | 45 | | | | 28-30 | Gravel (Petro Odor) | | |
| 15 | 37 | S-8 | 24/16 | 14-16 | 17-17 | S-7: Very dense, black/red, fine to coarse SAND, trace (+) Silt, | 5 | |
| | 61 | | | | 38-34 | trace Twig, trace Brick (Petro Odor) | | |
| | 52 | S-9 | 24/17 | 16-18 | 22-42 | S-8: Very dense, black, fine to coarse SAND, trace (+) Silt, | 6 | |
| | 38 | | | | 37-34 | trace brick (Petro Odor) | | |
| | 52 | S-10 | 24/10 | 18-20 | 13-20 | S-9: Very dense, black, fine to coarse SAND, some (-) Silt, | 7 | |
| | 47 | | | | 13-13 | trace (-) fine Gravel (Petro Odor and Sheen) | | |
| | 26 | S-11 | 24/14 | 20-22 | 13-21 | S-10: Dense, black/green, fine to coarse SAND, some (-) Silt, | 8 | |
| | 24 | | | | 24-19 | trace (-) fine Gravel (Petro Odor and Sheen) | | |
| | 51 | | | | | S-11: Dense, gray, fine to coarse SAND, little (-) Silt, trace (+) | | |
| | 43 | S-12 | 24/5 | 23-25 | 18-19 | fine to coarse Gravel | 9 | |
| 25 | 42 | | | | 18-14 | S-12: Dense, gray, fine to coarse SAND, trace (+) Silt, trace (-) | | SAND |
| | 28 | | | | | fine Gravel | | |
| | 28 | | | | | | | |
| | 37 | | | | | | | |
| | 43 | S-13 | 24/6 | 28-30 | 15-10 | Medium dense, brown/gray, fine to coarse SAND, trace fine Gravel, | 10 | |
| | 45 | | | | 14-12 | trace (-) Silt | | |
| | 47 | | | | | | | |
| | 48 | | | | | | | |
| | 43 | | | | | | | |
| | 46 | S-14 | 24/1 | 33-35 | 10-13 | Medium dense, gray, coarse GRAVEL | 11 | |
| | | | | | 11-13 | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Casing driven to 4', cleaned to 4' then S-3 (4-6') and S-4 (6-8') taken. |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 8', cleaned to 8', then S-5 (8-10') taken (Hard Drilling). |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Washed ahead to 10', then advance casing to 10', cleaned to 10' then S-6 (10-12'). |
| 30-50 DENSE | 8-15 STIFF | 4. Casing driven to 12', cleaned to 12' then S-7 (12-14') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 14', cleaned to 14' then S-8 (14-16') taken. |
| | >30 HARD | 6. Casing driven to 16', cleaned to 16' then S-9 (16-18') taken. |
| | | 7. Casing driven to 18', cleaned to 18', then S-10 (18-20') taken. |

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| | | | |
|--|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND | PROJECT | REPORT OF BORING NO. | GZ-214 |
| | Keyspan LNG Facility | SHEET | 2 of 2 |
| GEOTECH/GEOHYDROLOGICAL CONSULTANTS | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|------------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 48 | | | | | | SAND ±36' | |
| | 47 | | | | | | | |
| | 52 | | | | | | | |
| | 54 | | | | | | | |
| | 58 | | | | | | | |
| 40 | 34 | S-15 | 24/16 | 39-41 | 9-7 | Medium dense, brown SILT, some fine Sand | 12 | |
| | 36 | | | | 11-11 | | | |
| | 39 | | | | | | | |
| | 46 | | | | | | | |
| | 51 | | | | | | | |
| 45 | 42 | S-16 | 24/18 | 44-46 | 13-10 | Medium dense, gray SILT | 13 | |
| | 47 | | | | 13-10 | | | |
| | 40 | | | | | | | |
| | 43 | | | | | | | |
| | 50 | | | | | | | |
| 50 | | S-17 | 24/16 | 49-51 | 10-11 | Medium dense, gray SILT | 14 | |
| | | | | | 11-11 | | | |
| | | | | | | End of Exploration at ±51' | | |
| | | | | | | | | |
| 55 | | | | | | | | |
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| 70 | | | | | | | | |
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| | | | | | | | | |
| 75 | | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
|------------------------------------|--------------|------------------------------------|-----------|----------|
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | |
| 10-30 | MEDIUM DENSE | 4-8 | M. STIFF | |
| 10-50 | DENSE | 8-15 | STIFF | |
| >50 | VERY DENSE | 15-30 | V. STIFF | |
| | | >30 | HARD | |

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| BORING CO. <u>New Hampshire Boring</u> OPERMAN <u>Norm Stuttard</u> GZA ENG. <u>Joanne Kissinger/ Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>13 ft</u> DATUM <u>MLLW</u> DATE START <u>05-18-05</u> DATE END <u>05-20-05</u> |
|--|--|

| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05-19-05</td> <td>07:10</td> <td>6.36'</td> <td>19</td> <td>16.5</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05-19-05 | 07:10 | 6.36' | 19 | 16.5 | | | | | |
|--|---|-------|--------|--------------------|--------|--------------------|----------|-------|-------|----|------|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | |
| 05-19-05 | 07:10 | 6.36' | 19 | 16.5 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|---------------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | | | | | | 1 | ±1' | |
| | | | | | | | ±2' CONCRETE RUBBLE | |
| | 11 | S-1 | 24/7 | 2-4 | 4-9 | | FILL | |
| | 14 | | | | 8-9 | | | |
| | 42 | S-2 | 24/14 | 4-6 | 16-8 | 2 | | |
| | 27 | | | | 9-9 | | | |
| | 12 | S-3 | 24/8 | 6-8 | 11-6 | 3 | FILL | |
| | 5 | | | | 3-7 | | | |
| | 17 | S-4 | 24/7 | 8-10 | 11-6 | 4 | | |
| | 16 | | | | 3-2 | | | |
| 10 | 4 | S-5 | 24/4 | 10-12 | 5-2 | 5 | FILL | |
| | 4 | | | | 1-1 | | | |
| | 2 | S-6 | 24/4 | 12-14 | 5-1 | 6 | | |
| | 4 | | | | 0-1 | | | |
| 15 | 10 | S-7 | 24/4 | 14-16 | 3-1 | 7 | ±14' | |
| | 8 | | | | 1-5 | | SAND | |
| | 11 | | | | | | | |
| | 9 | | | | | | | |
| | 15 | | | | | | | |
| 0 | 50 | S-8 | 24/6 | 19-21 | 13-12 | 8 | SAND | |
| | 26 | | | | 6-10 | | | |
| | 28 | | | | | | | |
| | 27 | | | | | | | |
| 25 | 30 | S-9 | 24/3 | 24-26 | 18-13 | 9 | SAND | |
| | 35 | | | | 18-16 | | | |
| | 35 | | | | | | | |
| | 40 | | | | | | | |
| 30 | 40 | S-10A | 24/14 | 29-31 | 8-6 | 10 | ±30' | |
| | 35 | S-10B | | | 8-10 | | SILT | |
| | 45 | | | | | | | |
| | 45 | | | | | | | |
| | 50 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. 0'-1' (PHD) Post Hole digger, Rollerbit concrete from 1'-2'. |
| 4-10 LOOSE | 2-4 SOFT | 2. Casing driven to 4', cleaned to 4' then S-2 (4-6') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing driven to 6', cleaned to 6' then S-3 (6-8') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 8', cleaned to 8', then S-4 (8-10') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 10', cleaned to 10' then S-5 (10-12') taken. |
| | >30 HARD | 6. Casing driven to 12', cleaned to 12', then S-6 (12-14') taken. |
| | | 7. Casing driven to 16', cleaned to 16' then S-7 (14-16') taken. |
| | | 8. Casing driven to 19', cleaned to 19', then S-8 (19-21') taken. |
| | | 9. Casing driven to 24', cleaned to 24', then S-9 (24-26') taken. |
| | | 10. Casing driven to 29', cleaned to 29', then S-10 (29-31') taken. |

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| BORING CO. <u>New Hampshire Boring</u> OPERMAN <u>Norm Stuttard</u> GZA ENG. <u>Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>13 ft</u> DATUM <u>MLLW</u> DATE START <u>05/16/05</u> DATE END <u>05/17/05</u> |
|--|--|

| AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05-16-05</td> <td>1700</td> <td>8.29'</td> <td>29'</td> <td>30 Minutes</td> </tr> <tr> <td>5-20-05</td> <td></td> <td>8.36</td> <td>Well</td> <td>4 Days</td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05-16-05 | 1700 | 8.29' | 29' | 30 Minutes | 5-20-05 | | 8.36 | Well | 4 Days |
|--|---|-------|--------|--------------------|--------|--------------------|----------|------|-------|-----|------------|---------|--|------|------|--------|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | |
| 05-16-05 | 1700 | 8.29' | 29' | 30 Minutes | | | | | | | | | | | | |
| 5-20-05 | | 8.36 | Well | 4 Days | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|----------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | | | | | 1 | | |
| | P | | | | | 2 | | |
| | P | | | | | | SAND (FILL) | |
| | P | S-1 | 24/12 | 3-5 | 11-10 | | | |
| | P | | | | 7-7 | | | |
| | 7 | S-2 | 24/5 | 5-7 | 10-7 | 3 | | |
| | 17 | | | | 6-7 | ±7' | | |
| | 22 | S-3 | 24/14 | 7-9 | 11-8 | | SILT | |
| | 29 | | | | 4-2 | ±9' | | |
| 10 | 11 | S-4 | 24/4 | 9-11 | 9-5 | 4 | | |
| | 19 | | | | 3-3 | | SAND (FILL) | |
| | 22 | S-5 | 24/10 | 11-13 | 5-4 | | | |
| | 27 | | | | 4-7 | | | |
| 15 | 9 | S-6 | 24/1 | 13-15 | 7-4 | 5 | | |
| | 11 | | | | 2-1 | | | |
| | 9 | S-7 | 24/8 | 15-17 | 11-3 | 6 | | |
| | 16 | | | | 3-1 | ±17' | | |
| | 12 | S-8 | 24/16 | 17-19 | 7-3 | 7 | | |
| | 19 | | | | 3-1 | | | |
| 20 | 22 | S-9 | 24/16 | 19-21 | 3-1 | 8 | ORGANIC SILT | |
| | 26 | | | | 3-7 | | | |
| | 28 | | | | | | | |
| | 52 | | | | | | | |
| | 55 | | | | | | | |
| 25 | 47 | S-10 | 24/8 | 24-26 | 23-14 | 9 | | |
| | 40 | | | | 11-9 | | SAND (OUTWASH) | |
| | 44 | | | | | | | |
| | 73 | | | | | | | |
| | 68 | | | | | | | |
| 30 | 122 | S-11 | 24/16 | 29-31 | 33-16 | 10 | | |
| | 133 | | | | 18-23 | | | |
| | 138 | | | | | | | |
| | 140 | | | | | | | |
| | 139 | | | | | | | |

| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
|------------------------------------|------------------------------------|---|
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Dug by hand to clear utilities. |
| 4-10 LOOSE | 2-4 SOFT | 2. Concrete encountered at 1', cleared by KEYSpan and used rollerbit through concrete to 3' (2' thick) then S-1 (3-5') taken. |
| 0-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Push 4" HW casing to 5', cleaned to 5' then S-2 (5-7') and S-3 (7-9') taken. |
| 0-50 DENSE | 8-15 STIFF | 4. Casing driven to 8', cleaned to 9' then S-4 (9-11') and S-5 (11-13') taken. |
| >50 VERY DENSE | 15-30 V. STIFF | 5. Casing driven to 13', cleaned to 13' then S-16 (13-15'), possible pushing gravel. |
| | >30 HARD | 6. Casing driven to 15', cleaned to 15' then S-7 (15-17') taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| EPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|----------------------------|--------------|--------|----------|------------|----------|--|--------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 50 | S-12 | 24/12 | 34-36 | 13-13 | Dense, brown SILT | 11 | SILT |
| | 65 | | | | 18-20 | | | |
| | 78 | | | | | | | |
| | 81 | | | | | | | |
| | 84 | | | | | | | |
| 45 | 70 | S-13 | 24/14 | 39-41 | 11-15 | Dense, brown SILT | 12 | SILT |
| | 83 | | | | 17-15 | | | |
| | 97 | | | | | | | |
| | 101 | | | | | | | |
| | 106 | | | | | | | |
| 55 | 119 | S-14 | 24/18 | 44-46 | 15-18 | Dense, brown/gray SILT | 13 | SILT |
| | 136 | | | | 25-26 | | | |
| | 140 | | | | | | | |
| | 159 | | | | | | | |
| | 198 | | | | | | | |
| 50 | | S-15 | 24/14 | 49-51 | 18-27 | Very dense, gray SILT | 14 | SILT |
| | | | | | 31-27 | | | |
| End of Exploration at ±51' | | | | | | | | |

| | | | |
|-------------------------|-------------------------|---|--|
| GRANULAR SOILS | COHESIVE SOILS | REMARKS: | |
| BLOWS/FT DENSITY | BLOWS/FT DENSITY | | |
| 0-4 VERY LOOSE | <2 VERY SOFT | 7. Casing driven to 17', cleaned to 17' then S-8 (17-19') taken. 8. Casing driven to 19', cleaned out to 19', then S-9 (19-21') taken. 9. Casing driven to 24', cleaned to 24', then S-10 (24-26') taken. 10. Casing driven to 29', cleaned to 29' then S-11 (29-31') taken. 11. Casing driven to 34', cleaned to 34' then S-12 (34-36') taken. 12. Casing driven to 39', cleaned to 39' then S-13 (39-41') taken. 13. Casing driven to 44', cleaned to 44' then S-14 (44-46') taken. 14. Groundwater well installed, screened from 15' to 5', riser from 5' to 0', guard pipe from 0' to (+) 3', filter sand from 16' to 4', bentonite seal from 4' to 3', cuttings from 3 to 1'. Capped off with cement from 1' to 0'. | |
| 4-10 LOOSE | 2-4 SOFT | | |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | | |
| 30-50 DENSE | 8-15 STIFF | | |
| >50 VERY DENSE | 15-30 V. STIFF | | |
| | >30 HARD | | |

NOTES:

- 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
- 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | |
|--|--|
| DRILLING CO. <u>New Hampshire Boring</u> OPERATOR <u>Charlie O'Donnel</u> ENGINEER <u>Daniel E. Oaks</u> | BORING LOCATION <u>See Exploration Location Plan</u> GROUND SURFACE ELEV. <u>13 ft</u> DATUM <u>MLLW</u> DATE START <u>05-17-05</u> DATE END <u>05-18-05</u> |
|--|--|

| SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN. CASING SIZE: <u>4" HW</u> OTHER: | GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>TIME</th> <th>WATER</th> <th>CASING</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>05-18-05</td> <td>0730</td> <td>9.62'</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | DATE | TIME | WATER | CASING | STABILIZATION TIME | 05-18-05 | 0730 | 9.62' | | | | | | | | | | | | |
|---|--|-------|--------|--------------------|--------|--------------------|----------|------|-------|--|--|--|--|--|--|--|--|--|--|--|--|
| DATE | TIME | WATER | CASING | STABILIZATION TIME | | | | | | | | | | | | | | | | | |
| 05-18-05 | 0730 | 9.62' | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|------------------------|------------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| | P | | | | | | | |
| | P | | | | | | | |
| | P | S-1 | 24/14 | 2-4 | 10-9 | Medium dense, brown, fine to coarse SAND, trace (+) Silt, | FILL | |
| | P | | | | 8-8 | trace (-) fine Gravel | | |
| | 17 | S-2 | 24/8 | 4-6 | 14-11 | Medium dense, brown, fine to coarse SAND, trace (+) Silt, | | |
| | 15 | | | | 10-9 | trace (-) fine Gravel | ±6.25' | |
| | 3 | S-3 | 24/3 | 6-6.25 | 50/3" | Very dense, brown, fine to coarse SAND, trace (+) Silt, trace | ±6.75' CONCRETE RUBBLE | |
| | 7 | | | | 100/0" | (-) fine Gravel | ±8.75' | |
| | 7 | S-4 | 24/7 | 6.75-8.75 | 3-1-1-1 | S-4: Very Loose, Gray/black, fine to coarse SAND, some (+) Silt, | ±9' CONCRETE RUBBLE | |
| 10 | 10 | S-5 | 24/8 | 9-11 | 8-3 | trace fine Gravel | | |
| | 12 | | | | 12-4 | S-5: Medium dense, brown/black, fine SAND and SILT, | FILL | |
| | 15 | S-6 | 24/6 | 11-13 | 18-16 | trace fine Gravel, trace Roots | | |
| | 25 | | | | 10-8 | S-6: Medium dense, brown/black, fine to medium SAND, some | ±13' | |
| | 22 | S-7 | 24/3 | 13-15 | 14-7 | (+) Silt, trace iron Pipe, trace fine Gravel | ORGANIC SILT AND PEAT | |
| 15 | 18 | | | | 4-4 | S-7A: (top 2") Stiff, gray Organic SILT, trace (+) fine to coarse Sand | ±15' | |
| | 12 | S-8 | 24/6 | 15-17 | 5-2 | S-7B: (bottom 1") Stiff, black/gray SILT | | |
| | 9 | | | | 2-1 | and Fibrous Peat | | |
| | 8 | | | | | S-8: Soft, gray Organic SILT, trace (-) Wood, trace (-) fine to medium | ORGANIC SILT | |
| | 9 | | | | | Sand | | |
| 0 | 9 | S-9 | 24/5 | 19-21 | 5-2 | Soft, gray/black Organic SILT, trace (-) Peat, trace (-) Shells | | |
| | 11 | | | | 2-3 | | | |
| | 10 | | | | | | | |
| | 19 | | | | | | | |
| | 22 | | | | | | ±23.5' | |
| 25 | 35 | S-10 | 24/8 | 24-26 | 13-13 | Medium dense, gray, fine to coarse SAND, little (-) fine to | | |
| | 36 | | | | 12-11 | coarse Gravel, little (-) Silt | SAND | |
| | 34 | | | | | | | |
| | 40 | | | | | | | |
| | 30 | | | | | | | |
| 0 | 33 | S-11 | 24/11 | 29-31 | 24-13 | Dense, gray, fine to coarse SAND, some (-) fine to coarse | | |
| | 40 | | | | 17-18 | Gravel, trace (+) Silt | | |
| | 34 | | | | | | | |
| | 32 | | | | | | | |
| | 28 | | | | | | | |

| | | |
|------------------------------------|------------------------------------|--|
| GRANULAR SOILS BLOWS/FT DENSITY | COHESIVE SOILS BLOWS/FT DENSITY | REMARKS: |
| 0-4 VERY LOOSE | <2 VERY SOFT | 1. Hand excavated 0-2' with Post Hole Digger (PHD). |
| 4-10 LOOSE | 2-4 SOFT | 2. S-1 driven open hole. |
| 10-30 MEDIUM DENSE | 4-8 M. STIFF | 3. Casing pushed to 4', cleaned to 4', then S-2 (4-6') taken. |
| 10-50 DENSE | 8-15 STIFF | 4. Casing driven to 6', cleaned to 6' then S-3 (6-8') taken spoon obstructed. KEYSpan re-checked utility paths |
| >50 VERY DENSE | 15-30 V. STIFF | and advised that slab may be present at 6.75' below ground surface. |
| | >30 HARD | |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

| | | | |
|---|--------------------------|----------------------|----------|
| GZA GEOENVIRONMENTAL INC. 10 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS | PROJECT | REPORT OF BORING NO. | GZ-217 |
| | Keyspan LNG Facility | SHEET | 2 of 2 |
| | Providence, Rhode Island | FILE NO. | 32784.01 |
| | | CHKD BY | AH |

| DEPTH | CASING BLOWS | SAMPLE | | | | SAMPLE DESCRIPTION BURMISTER CLASSIFICATION | R K | STRATUM DESCRIPTION |
|-------|--------------|--------|----------|------------|----------|--|--------|---------------------|
| | | NO | PEN./REC | DEPTH (FT) | BLOWS/6" | | | |
| 35 | 30 | S-12 | 24/10 | 34-36 | 14-11 | Medium dense, brown and grey, fine to coarse SAND and fine Gravel, Little Silt | ±37' | SAND |
| | 36 | | | | 14-14 | | | |
| | 66 | | | | | | | |
| | 78 | | | | | | | |
| | 73 | | | | | | | |
| | 75 | S-13 | 24/10 | 39-41 | 43-17 | Dense, olive SILT | | SILT |
| | 103 | | | | 16-21 | | | |
| | 116 | | | | | | | |
| | 120 | | | | | | | |
| | 124 | | | | | | | |
| 45 | 58 | S-14 | 24/12 | 44-46 | 17-13 | Medium dense, olive SILT | | |
| | 65 | | | | 15-15 | | | |
| | 55 | | | | | | | |
| | 72 | | | | | | | |
| | 60 | | | | | | | |
| 50 | | S-15 | 24/8 | 49-51 | 15-12 | Medium dense, olive/gray SILT | | |
| | | | | | 13-17 | | | |
| | | | | | | End of Exploration at ±51' | | |
| | | | | | | 6. S-4 Note: Spoon collected disturbed sample from 6.9' to 8.9' and encountered obstruction again. Impression is presence of concrete pipe with 2' ID and ±6" wall thickness. Keyspan LNG representative was contacted prior to using rollerbit at 6.3' obstacle. Paul Bailey cleared area for presence of active utilities. Keyspan representative Paul Bailey contacted upon encountering obstacle at ±8.9' and made second inspection of area and authorized continued drilling through what he suggested was an abandoned pipe from a former area structure. | | |
| | | | | | | 7. Casing driven to 9' (experienced 2 bouncing blows at ±6.3' then only moderate effort to advance casing to 9'. | | |
| | | | | | | 8. Casing driven to 11', cleaned to 11' then S-6 (11-13') taken Note: S-6 sample contained a fragment of iron (possible iron pipe) | | |

| GRANULAR SOILS BLOWS/FT DENSITY | | COHESIVE SOILS BLOWS/FT DENSITY | | REMARKS: |
|------------------------------------|--------------|------------------------------------|-----------|---|
| 0-4 | VERY LOOSE | <2 | VERY SOFT | |
| 4-10 | LOOSE | 2-4 | SOFT | 10. Casing driven to 15', cleaned to 15' then S-8 (15-17') taken. |
| 0-30 | MEDIUM DENSE | 4-8 | M. STIFF | 11. Casing driven to 19', cleaned to 19', then S-9 (19-21') taken. |
| 0-50 | DENSE | 8-15 | STIFF | 12. Casing driven to 24', cleaned to 24' then S-10 (24-26') taken. |
| >50 | VERY DENSE | 15-30 | V. STIFF | 13. Casing driven to 29', cleaned to 29', then S-11 (29-31') taken. |
| | | >30 | HARD | 14. Casing driven to 34', cleaned to 34' then S-12 (34-36') taken. |
| | | | | 15. Casing installed to 39', cleaned then S-13 (39-41) taken. |

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-301D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 17.87
Final Boring Depth (ft.): 30
Date Start - Finish: 5/22/2014 - 5/30/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/3/14 | N.A | 10.01 | 3 Days |
| 6/11/14 | 11:55 | 9.99 | 11 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Top 12": Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, Dry Bottom 12": Brown (10YR, 5/3) fine SAND, some Silt, Dry | 1 2 | ND ND | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Red-brown (5YR, 4/4) SLAG, some fine to coarse Sand, little Ash, Dry | | ND | | | | |
| 3 | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Red-brown (5YR, 4/4) SLAG, some fine to coarse Sand, little Ash, Dry | | ND | | | | |
| 5 | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 0 | 3 1 1 1 | S-4 : Very loose, no recovery | | NM | | | FILL | |
| 7 | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 6 | 1 1 2 2 | S-5 : Very loose, dark brown (10YR, 3/2) SLAG, some fine to coarse SAND, trace (+) Gravel, trace (+) Silt, trace (+) Brick, trace (+) Coal, trace Ash, Wet | 3 | ND | | | | ← PVC Riser |
| 9 | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 6 | 3 1 2 9 | S-6 : Very loose, dark brown (10YR, 3/2) SLAG, some fine to coarse SAND, trace (+) Gravel, trace (+) Silt, trace (+) Brick, trace (+) Coal, trace Ash, Wet | | ND | | | | |
| 11 | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 12 | 8 1 1 6 | S-7 : Top 4": Dark brown (10YR, 3/2) SLAG, some fine to coarse SAND, trace (+) Gravel, trace (+) Silt, trace (+) Brick, trace (+) Coal, trace Ash, Wet Bottom 8" Very loose, gray brown (10YR, 4/2) fine to coarse SAND, little Silt, trace (+) Gravel, Wet | | ND ND | | | | |
| 13 | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 4 | 17 11 8 2 | S-8 : Medium dense, gray brown (10YR, 4/2) GRAVEL, little fine to coarse Sand, little Silt, Wet | | ND | | | 14 3.9 POSSIBLE FILL/SANDS AND SILT | |
| 15 | | | | | | | | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 8 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-301D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:07 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-301D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth(ft.) | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|------------|---------------------|------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 8 | 3 2 5 4 | S-9 : Loose, gray brown (10YR, 4/2) fine to coarse SAND, little Gravel, little Silt, Wet | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 4 | 3 4 4 4 | S-10 : Loose, gray brown (10YR, 4/2) fine to coarse SAND, little Gravel, little Silt, Wet | | | | | | | | |
| 19 | | | | | | | 4 | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 12 | 25 8 1 2 | S-11 : Loose, dark gray (10YR, 4/1) Organic SILT and SAND, little Wood, little Roots, trace Gravel, Wet | | | | | 20 | -2.1 | | |
| 21 | | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 16 | 4 3 4 4 | S-12 : Top 6": Dark gray (10YR, 4/1) Organic SILT and SAND, little Wood, little Roots, trace Gravel, Wet Bottom 10": Dark gray (10YR, 4/1) Organic SILT, trace Wood, trace Roots, Wet | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 20 | 4 3 1 2 | S-13 : Top 6": Dark gray (10YR, 4/1) Organic SILT, trace Wood, trace Roots, Wet Bottom 14" red brown (5YR, 5/4) PEAT, some Roots, some Wood, trace Gravel, Wet | | | | | | | | |
| 25 | | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 24 | 13 10 14 13 | S-14 : Top 8": Red brown (5YR, 5/4) PEAT, some Roots, some Wood, trace Gravel, Wet 8"-16": Red brown (5YR, 5/4) fine to coarse SAND and SILT, trace Gravel, trace Roots, trace wood, trace Organics, Wet Bottom 8": Gray (10YR, 4/1) fine SAND, trace Silt, trace Gravel, Wet | | | | | 27 | -9.1 | | |
| 27 | | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 14 | 5 4 4 3 | S-15 : Loose, gray (10YR, 4/1) fine SAND and SILT, trace (+) Gravel, Wet | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -12.1 | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs, 2" Diameter, Schedule 40, flush joint, PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 16-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-301D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:07 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-302D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 16.97
Final Boring Depth (ft.): 30
Date Start - Finish: 5/22/2014 - 5/30/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/11/14 | 10:45 | 9.47 | 13 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|-----------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Top 12" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, dry Bottom 12" Yellow brown (10YR, 5/6) fine SAND, little Silt, dry | 1 2 | ND ND | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/6) fine SAND, some Silt, moist | 0.1 | | | | | Possible Fill/SAND and SILT | ← Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Brown (10YR, 4/3) fine to medium SAND, little Gravel, little Silt, moist | 0.1 | | | | | | |
| 4 | S-4 | 6-8 | 24 | 3 | 12 11 12 12 | S-4 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, trace (+) Gravel, trace Silt, wet | | ND | | | | | |
| 5 | S-5 | 8-10 | 24 | 6 | 12 12 12 13 | S-5 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, trace (+) Gravel, trace Silt, wet | 3 | ND | | | | | ← PVC Riser |
| 6 | S-6 | 10-12 | 24 | 16 | 10 10 11 14 | S-6 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, trace (+) Gravel, trace Silt, wet | | ND | | | | SAND | |
| 7 | S-7 | 12-14 | 24 | 0 | 12 15 11 12 | S-7 : Medium dense, no Recovery | | NM | | | | | |
| 8 | S-8 | 14-16 | 24 | 9 | 13 9 14 9 | S-8 : Medium dense, tan/gray (10YR, 5/1) fine to coarse SAND, little Gravel, trace Silt, wet | | ND | | | | | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 7 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-302D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:08 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-302D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 12 | 9 11 23 7 | S-9 : Dense, gray (GLEY, 5/N) fine to coarse SAND, little (+) Gravel, trace (+) Silt, moderate oil-like odor, wet | | | | | | | ← Filter Sand |
| 17 | | | | | | | | | | Mod | | | |
| 18 | S-10 | 18-20 | 24 | 14 | 23 12 23 15 | S-10 : Dense, tan (10YR, 4/2) fine to coarse SAND, little Gravel, trace (-) Silt, moderate oil-like odor, oil-like blebs observed from 19.5-19.7 feet bgs, wet | 4 | | | | | | ← Bentonite Seal |
| 19 | | | | | | | | | | Mod | | | |
| 20 | S-11 | 20-22 | 24 | 7 | 14 13 18 14 | S-11 : Dense, tan/gray (10YR, 4/3) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, wet | | | | | | | Well Screen |
| 21 | | | | | | | | | | Sigt | | | |
| 22 | S-12 | 22-24 | 24 | 12 | 10 8 8 7 | S-12 : Medium dense, gray (GLEY, 4/10YR) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | | | | SAND | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 5 | 11 13 15 13 | S-13 : Medium dense, gray (GLEY, 4/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 17 | 15 14 10 12 | S-14 : Medium dense, gray (GLEY, 4/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 9 | 16 16 38 17 | S-15 : Dense, gray (GLEY, 4/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | | 30 | -13.0 |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-4 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-302D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-303D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.78
Final Boring Depth (ft.): 30
Date Start - Finish: 5/22/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 5/30/14 | NM | 6.41 | 1 Day |
| 6/3/14 | NM | 6.38 | 5 days |
| 6/12/14 | 13:30 | 6.39 | 14 days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|-----------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, trace Roots, dry | 1 2 | ND | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/6) fine SAND, little Silt, trace Gravel, dry | | ND | | | | | ← Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Brown (7.5YR, 5/6) fine SAND, little Silt, trace Gravel, moist | | ND | | | | | ← PVC Riser |
| 4 | S-4 | 6-8 | 24 | 16 | 8 8 6 6 | S-4 : Medium dense, tan (10YR, 6/2) fine to coarse SAND, trace Gravel, trace Silt, wet | | ND | | | | FILL | |
| 5 | S-5 | 8-10 | 24 | 4 | 12 7 7 7 | S-5 : Medium dense, gray (GLE Y 1, 5/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, moderate oil-like odor, slight sheen, wet | 3 | 66 | | Mod | | | |
| 6 | S-6 | 10-12 | 24 | 1 | 15 8 9 8 | S-6 : Medium dense, gray (GLE Y 1, 5/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, moderate oil-like odor, slight sheen, wet | | 51 | | Mod | | | |
| 7 | S-7 | 12-14 | 24 | 15 | 19 20 15 14 | S-7 : Dense, gray (GLE Y 1, 5/10YR) fine to coarse SAND, little (+) Gravel, trace (+) Silt, moderate oil-like odor, slight sheen, wet | | 341 | | Mod | 12 | 1.8 | ← Filter Sand |
| 8 | S-8 | 14-16 | 24 | 9 | 15 11 10 9 | S-8 : Medium dense, gray (GLE Y 1, 5/10YR) fine to coarse SAND, little (+) Gravel, trace (+) Silt, moderate oil-like odor, slight sheen, wet | | 604 | | | | SAND AND SILT | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 6.5 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-303D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:10 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-303D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 14 | 6 4 4 8 | S-9 : Loose, gray/tan (10YR, 5/1) fine SAND, trace (+) Silt, wet | ND | | Mod | | | | |
| 17 | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 18 | 3 5 4 3 | S-10 : Loose, gray/tan (10YR, 5/1) fine (+) to medium SAND, trace (+) Silt, slight oil-like odor, wet | 6 | | | | 18 | -4.2 | Filter Sand |
| 19 | | | | | | | 4 | | Sigt | | | | Bentonite Seal |
| 20 | S-11 | 20-22 | 24 | 16 | 5 5 5 4 | S-11 : Medium dense, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet | ND | | | | | | Filter Sand |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 18 | 5 6 6 9 | S-12 : Medium dense, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet | ND | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 17 | 11 7 7 10 | S-13 : Medium dense, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet | ND | | | | | | |
| 25 | | | | | | | | | | | 25 | -11.2 | Well Screen |
| 26 | S-14 | 26-28 | 24 | 19 | 5 4 4 5 | S-14 : 0-15" Gray (GLEY 1, 5/N) fine SAND, little (+) Silt, wet 15"-19" Tan/gray (10YR, 5/1) fine (+) to medium SAND, trace Silt, wet | ND | | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 17 | 6 7 8 11 | S-15 : Medium dense, tan/gray (10YR, 5/1) fine (+) to medium SAND, trace Silt, wet | ND | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -16.2 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-3 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-303D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-304D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MB/SN/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.78
Final Boring Depth (ft.): 30
Date Start - Finish: 5/21/2014 - 5/24/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 6.66 | 5 Days |
| 6/3/14 | NM | 6.50 | 10 Days |
| 6/13/14 | NM | 6.44 | 20 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Dark brown (10YR, 3/3) fine SAND, some Silt, trace Gravel, dry 6"-24" Black (10YR, 2/1) fine SAND, little Ash, trace Silt, trace Gravel, trace Slag, dry | 1 2 | ND ND | | | | | ← Road Box |
| | | | | | | | | | | | | | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine SAND, little Ash, trace Silt, trace Gravel, trace Slag, dry | 0.7 | | | | | | ← Bentonite Seal |
| 3 | | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine SAND, little Ash, trace (+) Slag, trace (+) Brick, trace Silt, trace Gravel, moist | 1 | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 8 | 1 2 3 1 | S-4 : Very loose, gray (GLEY 1, 4N) fine to coarse SAND, little Silt, trace (+) Gravel, trace Brick, slight Coal tar-like odor, wet | 13 | | Sigt | | | FILL | ← Filter Sand |
| 7 | | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 12 | 5 5 6 7 | S-5 : Medium dense, tan (2.5YR, 4/2) fine to coarse SAND, little Gravel, trace Silt, trace Brick, strong Coal tar-like odor, wet | 3 | 48 | | | | | |
| 9 | | | | | | | 4 | | Strg | | | | |
| 10 | S-6 | 10-12 | 24 | 18 | 5 6 7 7 | S-6 : Medium dense, gray (GLEY 1, 5/10YR) fine to coarse SAND, little (-) Gravel, trace Silt, slight Coal tar-like odor, wet | 6 | | | Sigt | | | |
| 11 | | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 5 | 8 5 7 8 | S-7 : Medium dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (-) Gravel, trace Silt, moderate oil-like and Coal tar-like odor, slight sheen, wet | 66 | | | Mod | | | |
| 13 | | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 1 | 7 4 2 2 | S-8 : Loose, gray (GLEY 1, 4/N) fine to coarse SAND, strong Coal tar-like odor, Coal tar saturated, wet | 14 | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6.5 feet bgs.

4 - Coal tar saturated lense observed between 9 and 10 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-304D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE: 12/28/2015; 2:41:12 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-304D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Depth(ft.) Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 12 | 3 3 3 3 | S-9 : 0-6" Gray (GLEY 1, 5/10Y) fine to coarse SAND, little Silt, trace Silt, wet 6-12" Gray (GLEY 1, 5/10Y) fine SAND, little (+) Silt, wet | | 1.5 | | | | |
| 17 | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 0 | 4 2 1 1 | S-10 : Very loose, no recovery | | NM | | | | |
| 19 | | | | | | | 5 | | | | | |
| 20 | S-11 | 20-22 | 24 | 24 | WOH | S-11 : Very loose, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, trace Shell fragments, wet | | 0.5 | | | 20 | -6.2 |
| 21 | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 24 | 1 WOH 1 1 | S-12 : Very loose, gray (GLEY 1, 5/N) fine SAND, little (+) Silt, trace Shell fragments, wet | | 0.7 | | | | |
| 23 | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 22 | 1 1 1 1 | S-13 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | |
| 25 | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 18 | WOH | S-14 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | |
| 27 | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | WOH | S-15 : Very loose, gray (GLEY 1, 5/N) fine (+) to medium (-) SAND, little (+) Silt, trace (+) Gravel, trace Shell fragments, wet | | ND | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -16.2 |
| 31 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | |

REMARKS
 5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 2-3 and 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-304D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:12 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-309D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.51
Final Boring Depth (ft.): 30
Date Start - Finish: 5/19/2014 - 5/20/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 2.73 | 9 Days |
| 6/16/14 | NM | 4.11 | 17 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-3" Black (10YR, 2/1) ASPHALT 3"-24" Dark gray (10YR, 4/1) fine to medium SAND, trace Gravel, trace Silt, trace Ash, dry | 1 2 | NM 0.2 | | | | | ← Road Box |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/4) fine SAND, some Silt, trace Gravel, dry | | 0.3 | | | | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Yellow brown (10YR, 5/4) fine SAND, some Silt, trace Gravel, dry | | 0.3 | | | | | |
| 4 | S-4 | 6-8 | 24 | 14 | 4 2 1 1 | S-4 : Loose, gray (10YR, 4/2) fine SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | | 263 | Mod | | | | |
| 5 | S-5 | 8-10 | 24 | 15 | 1 4 4 2 | S-5 : Loose, gray (10YR, 4/2) fine SAND, some Silt, trace Gravel, wet, sheen, slight to moderate oil-like odor | 3 | 281 | Mod | | | | |
| 6 | S-6 | 10-12 | 24 | 1 | 4 2 1 1 | S-6 : Loose, black (10YR, 2/1) fine SAND, little Silt, little Gravel, little Coal, wet, oil-like staining, slight oil-like odor | | 90 | Sigt | | | | |
| 7 | S-7 | 12-14 | 24 | 3 | 1 1 1 1 | S-7 : Very loose, black (10YR, 2/1) fine SAND, little Silt, little Gravel, little Coal, wet, oil-like staining | | 10 | | | | | ← PVC Riser |
| 8 | S-8 | 14-16 | 24 | 15 | 4 2 3 1 | S-8 : Loose, gray (10YR, 4/1) fine to Medium SAND, little Silt, little Gravel, wet | | 7.1 | | | | | ← Filter Sand |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-309D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:20 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-309D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|--------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 4 | 1 1 1 1 | S-9 : very loose, gray (10YR, 4/2) fine to coarse SAND, little Gravel, trace (+) Silt, wet, slight oil-like odor | | | | | | | | |
| 17 | | | | | | | | | | Slight | | FILL | | ← Filter Sand |
| 18 | S-10 | 18-20 | 24 | 15 | 2 1 1 2 | S-10 : Very soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Roots, trace Shells, wet | | | | | 18 | -7.5 | | ← Bentonite Seal |
| 19 | | | | | | | 4 | | | | | | | ← Filter Sand |
| 20 | S-11 | 20-22 | 24 | 18 | 1 2 1 1 | S-11 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 2 1 1 2 | S-12 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 20 | 1 1 1 1 | S-13 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | ORGANIC SILT | | |
| 25 | | | | | | | | | | | | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 20 | 2 1 1 1 | S-14 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 20 | 1 1 1 1 | S-15 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, trace Roots, wet | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -19.5 | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 18-19 feet bgs. Remaining annulus filled with filter sand and clean soil cuttings. Well protected with a flush mounted roadbox.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-309D**

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-310
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.76
Final Boring Depth (ft.): 30
Date Start - Finish: 5/25/2014 - 5/28/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|------|------|-------------|------------|
| NM | NM | NM | NM |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------|---|------------|------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Light brown (10YR, 4/2) fine to coarse SAND, some Gravel, trace (+) Silt, trace Brick, trace Asphalt, trace Concrete, dry | 1 2 | ND | | | | | | No Equipment Installed |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) fine to coarse SAND, little Gravel, trace Silt, trace Brick, trace Ash, trace Slag, moist | | ND | | | | | | |
| 3 | S-3 | 4-6 | 24 | 0 | 6 8 8 2 | S-3 : Medium dense, granular soils-no recovery | | NM | | | | FILL | | |
| 4 | S-4 | 6-8 | 24 | 12 | 5 4 3 2 | S-4 : 0-2" Black (10YR, 2/1) WOOD, wet, slight coal tar-like odor, slight sheen, stained 2"-12" Blue (GLEYS, 5/5) SILT and SAND, trace Wood, wet | | 40 13 | | Sght | | | | |
| 5 | S-5 | 8-10 | 24 | 24 | 6 18 7 20 | S-5 : 0-12" Black (10YR, 2/1) SAND and SILT, little Organics, trace Wood, trace Gravel, wet, slight coal tar-like odor, coal tar bands of saturation 12"-24" Gray (10YR, 4/1) fine to medium SAND, little Silt, trace Gravel, trace Organics, wet, slight coal tar-like odor | 3 | 201 106 | | Sght | | | | |
| 6 | S-6 | 10-12 | 24 | 18 | 4 1 1 1 | S-6 : Loose, gray (10YR, 5/1) fine to medium SAND, some Silt, trace Gravel, trace Organics, wet | | 1 | | | 10 | -0.2 | | |
| 7 | S-7 | 12-14 | 24 | 0 | 1 1 1 1 | S-7 : Loose, granular soils-no recovery | | NM | | | | Possible FILL/POSSIBLE ORGANIC SILT | | |
| 8 | S-8 | 14-16 | 24 | 14 | 1 1 1 1 | S-8 : Loose, gray (10YR, 5/1) fine to medium SAND, some Silt, trace Gravel, trace Organics, wet | | 1 | | | | | | |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-310

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:21 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-310
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|-------------|---|--------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 24 | 1 1 1 1 | S-9 : 0-20" Gray (10YR, 5/1) fine to medium SAND, some Silt, trace Gravel, trace Organics, wet 20"-24" Black (10YR, 2/1) fine to medium SAND, little Silt, little Organics, trace Gravel, wet | | 1 3.5 | | | 17 | Possible FILL/POSSIBLE ORGANIC SILT -7.2 | | |
| 18 | S-10 | 18-20 | 24 | 24 | 1 1 1 1 | S-10 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | | |
| 20 | S-11 | 20-22 | 24 | 12 | 1 1 1 1 | S-11 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | | |
| 22 | S-12 | 22-24 | 24 | 18 | 1 1 1 1 | S-12 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | | |
| 24 | S-13 | 24-26 | 24 | 24 | 1 1 1 1 | S-13 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Shells, trace wood, trace Gravel, wet | | ND | | | | | ORGANIC SILT | |
| 26 | S-14 | 26-28 | 24 | 24 | 1 1 1 1 | S-14 : Soft, dark gray (10YR, 4/1), ORGANIC SILT, trace Shells, wet | | ND | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | 1 1 1 1 | S-15 : Soft, dark gray (10YR, 4/1), ORGANIC SILT, trace Shells, wet | | ND | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | | -20.2 | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-310

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-311D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.03
Final Boring Depth (ft.): 30
Date Start - Finish: 5/19/2014 - 5/21/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 5/29/14 | NM | 4.74 | 8 Days |
| 6/6/14 | 10:08 | 4.89 | 16 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Groundwater Depth (ft.) | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------------|-----------------|--------|------|-------------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Elev. (ft.) | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10YR, 4/4) GRAVEL, some fine to medium Sand, trace Silt, dry | 1 2 | ND | | | | Stand Pipe | |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) GRAVEL, some fine to medium Sand, some Slag, trace Silt, moist | | ND | | | | | |
| 3 | | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | 24 | 12 | 14 10 11 11 | S-3 : Medium dense, gray brown (10YR, 4/2) fine to coarse SAND, some (+) Gravel, little Slag, trace (+) Silt, Wet | | ND | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 12 | 14 11 13 9 | S-4 : Medium dense, gray brown (10YR, 4/2) fine to coarse SAND, some (+) Gravel, little Slag, trace (+) Silt, Wet | | ND | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 20 | 1 1 2 1 | S-5 : Loose, gray (10YR, 5/2) fine to medium SAND, little Gravel, little Silt, trace Slag, wet | 3 | 10.4 | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 20 | 1 1 1 1 | S-6 : 0-10" Black (10YR, 2/1) fine SAND and SILT, some Organics, slight oil-like odor, wet 10"-20" Gray (10YR, 6/2) fine SAND and SILT, trace Gravel, slight to moderate blue staining, slight oil-like odor, wet | 12.2 16.5 | | | | 10 0.0 | | |
| 11 | | | | | | | | | Slight | | | | |
| 12 | S-7 | 12-14 | 24 | 12 | 1 1 3 3 | S-7 : Very loose, gray (10YR, 4/1) fine SAND and SILT, trace Gravel, slight blue staining, slight oil-like odor, wet | 6.8 | | | | | | |
| 13 | | | | | | | | | | | | Filter Sand | |
| 14 | S-8 | 14-16 | 24 | 16 | 8 27 20 11 | S-8 : Dense, gray black (10YR, 3/1) fine to medium SAND, some Silt, little Gravel, trace Roots, slight oil-like odor, wet | 49 | | | | | | |
| 15 | | | | | | | | | | | | | |

REMARKS

1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-311D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-311D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|--------|-------------------------------------|-------------|-------------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 6 | 5 4 4 5 | S-9 : Loose, gray (10YR, 4/2) fine SAND and SILT, trace Gravel, trace Roots, wet, Slight oil-like odor | | 23.5 | | Slight | | | |
| 17 | | | | | | | | | | | Possible FILL/POSSIBLE ORGANIC SILT | | Bentonite Seal Filter Sand |
| 18 | S-10 | 18-20 | 24 | 10 | 3 1 2 3 | S-10 : Very loose, black (10YR, 2/1) fine SAND and SILT, trace Gravel, trace Roots, wet, slight oil-like odor | | 10 | | Slight | | | Filter Sand |
| 19 | | | | | | | 4 | | | | | | |
| 20 | S-11 | 20-22 | 24 | 1 | 4 1 1 2 | S-11 : 0-3" Black (10YR, 2/1) ORGANIC SILT, trace Gravel, trace Roots, wet, slight oil-like odor 3"-4" Gray (10YR, 4/2) ORGANIC SILT, wet | | 1.2 ND | | Slight | | 20 -10.0 | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 8 | 1 2 1 3 | S-12 : Soft, gray (10YR, 4/2) ORGANIC SILT, trace Gravel, trace Shells, wet | | ND | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 22 | 1 1 1 1 | S-13 : Very soft, gray (10 YR 4/2) ORGANIC SILT, trace Gravel, trace Shells, wet | | ND | | | | | |
| 25 | | | | | | | | | | | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 26 | 3 1 2 3 | S-14 : Very soft, gray (10 YR 4/2) ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | 1 1 1 1 | S-15 : Very soft, gray (10 YR 4/2) ORGANIC SILT, trace Shells, wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | | 30 -20.0 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 18-30 feet bgs; Bentonite Seals installed from 16-18 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-311D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-312D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 8.55
Final Boring Depth (ft.): 30
Date Start - Finish: 5/23/2014 - 5/23/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 5/29/17 | NM | 4.59 | 6 Days |
| 6/6/14 | 10:15 | 4.61 | 14 Days |
| 6/10/14 | 8:05 | 4.16 | 18 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Brown (10YR, 4/4) fine to coarse SAND, little Gravel, trace (+) Silt, trace Brick, trace Roots, dry | 1 2 | ND | | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) fine to coarse SAND, little Gravel, trace (+) Silt, trace (+) Ash, trace Brick, trace Slag, moist | | ND | | | | FILL | | Bentonite Seal |
| 3 | | | | | | | | | | | | | | |
| 4 | S-3 | 4-6 | 24 | 7 | 7 4 1 2 | S-3 : Loose, tan (10YR, 4/1) fine (+) to coarse SAND< little (-) Silt, trace (-) Gravel, slight oil-like odor, wet | | 15 | | Sigt | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 8 | 3 3 3 3 | S-4 : Loose, gray (GLE Y 1, 3/10Y) fine (+) to coarse SAND, little Silt, trace (-) Gravel, moderate oil-like odor, slight sheen, wet | | 955 | | Mod | 6 | 2.6 | | PVC Riser |
| 7 | | | | | | | | | | | | | | |
| 8 | S-5 | 8-10 | 24 | 0 | 6 2 1 1 | S-5 : No recovery, loose granular soil | 3 | NM | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | S-6 | 10-12 | 24 | 0 | WOH 1 1 | S-6 : No recovery, loose granular soil | | NM | | | | Possible FILL | | |
| 11 | | | | | | | | | | | | | | |
| 12 | S-7 | 12-14 | 24 | 4 | 3 4 4 3 | S-7 : Loose, gray (GLE Y 1, 3/N) fine SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet | | 33 | | Sigt | | | | Bentonite Seal |
| 13 | | | | | | | | | | | | | | |
| 14 | S-8 | 14-16 | 24 | 10 | 5 6 6 3 | S-8 : 0-6" Gray (GLE Y 1, 3/N) fine SAND, little (-) Silt, trace (-) Gravel, slight oil-like odor, slight sheen, wet | | 7 | | Sigt | | | | |
| 15 | | | | | | 6"-10" Gray (GLE Y 1, 4/N) fine SAND, little Silt, | | | | | 15 | -6.5 | | |

REMARKS
1 - The upper 4 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 4 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-312D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:24 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-312D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|--------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 18 | WOH 1 2 | S-9 : Very soft, gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 3 | | Slight | ORGANIC SILT | 22 -13.5 | ← Filter Sand |
| 17 | | | | | | | | | | Slight | | | |
| 18 | S-10 | 18-20 | 24 | 16 | 1 1 1 3 | S-10 : Very soft, gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, wet | | 1.2 | | | | | |
| 19 | | | | | | | 4 | | | | | | |
| 20 | S-11 | 20-22 | 24 | 16 | 1 1 1 3 | S-11 : Very soft, gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, wet | | 0.4 | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 3 6 6 7 | S-12 : 0-5" Gray (GLEY 1, 4/N) ORGANIC SILT, trace Shells, wet 5"-20" Gray (GLEY 1, 4/N) fine to coarse SAND, little (+) Silt, trace Gravel, trace Shells, wet | | 0.2 | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 6 | 21 24 13 13 | S-13 : Dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (+) Gravel, trace Silt, wet | | 0.4 | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 5 | 9 8 8 11 | S-14 : Medium dense, gray (GLEY 1, 4/N) fine to coarse SAND, little (+) Gravel, trace Silt, wet | | 0.2 | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 10 | 15 13 12 14 | S-15 : Medium dense, tan (10YR, 5/6) fine to coarse SAND, little (+) Gravel, trace (+) Silt, wet | | 0.6 | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 14-30 feet bgs; Bentonite Seals installed from 1-2 and 13-14 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-312D**

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 1 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/WF
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.78
Final Boring Depth (ft.): 36
Date Start - Finish: 5/19/2014 - 5/27/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 5/29/14 | NM | 8.49 | 2 Days |
| 6/10/14 | 7:55 | 7.23 | 14 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|--------|-----------------|--------|------|---------------------|------------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Red-brown (10YR, 4/4) fine to coarse SAND, little Slag, trace Ash, trace Silt, dry | 1 2 | 0.4 | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Yellow brown (10YR, 5/4) fine SAND, little Silt, trace Gravel, moist | | 0.1 | | | | | Bentonite Seal |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Yellow brown (10YR, /4) fine SAND, little Silt, trace Gravel, slight oil-like odor, moist/wet | | 22 | | Sigt | FILL | | |
| 4 | S-4 | 6-8 | 24 | 5 | WOH 1 1 11 | S-4 : Very loose, gray (GLE Y 1, 4/10Y) fine to coarse SAND, little Gravel, trace Silt, trace Brick, wet | | 3 | | | | | |
| 5 | S-5 | 8-10 | 24 | 0 | WOH 1 3 4 | S-5 : Loose, granular soil, no recovery | 3 | NM | | | | | |
| 6 | S-6 | 10-12 | 24 | 21 | 6 1 5 6 | S-6 : Loose, gray (GLE Y 1, 3/N) fine (+) to coarse SAND, little Silt, trace Gravel, slight oil-like odor, slight sheen, wet | | 242 | | Sigt | | 10 -0.2 | |
| 7 | S-7 | 12-14 | 24 | 13 | 9 8 9 9 | S-7 : Medium dense, gray (GLE Y 1, 3/N) fine (+) to coarse SAND, little Silt, trace Gravel, slight oil-like odor, slight sheen, wet | | 108 | | Sigt | Possible Fill/Sands | | PVC Riser |
| 8 | S-8 | 14-16 | 24 | 110 | 8 9 4 3 | S-8 : Medium dense, gray (GLE Y 1, 3/N) fine to coarse SAND, little (-) Gravel, little (-) Silt, slight oil-like odor, slight sheen, wet | | 104 | | | | | Filter Sand |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 2 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum | | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|---------------------|-------------|----------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | Depth (ft.) | Description | |
| 16 | S-9 | 16-18 | 24 | 6 | 4 5 | S-9 : Medium dense, gray (GLEY 1, 3/N) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, slight sheen, wet | | 205 | Slight | | | | |
| 17 | | | | | 8 6 | | | | | | | | Slight |
| 18 | S-10 | 18-20 | 24 | 8 | 6 27 | S-10 : Very dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, slight sheen, wet | 4 | 252 | Slight | | | | |
| 19 | | | | | 37 22 | | | | | | | | Slight |
| 20 | S-11 | 20-22 | 24 | 9 | 10 8 | S-11 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, wet | | 67 | | Possible Fill/Sands | | | |
| 21 | | | | | 3 3 | | | | | | | | Slight |
| 22 | S-12 | 22-24 | 24 | 1 | 5 7 | S-12 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, slight oil-like odor, wet | | 32 | | | | | |
| 23 | | | | | 7 1 | | | | | | | | Slight |
| 24 | S-13 | 24-26 | 24 | 4 | 15 12 | S-13 : Dense, gray (GLEY 1, 3/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, slight oil-like odor, wet | | 48 | | | | Bentonite Seal | |
| 25 | | | | | 18 15 | | | | | | | | Slight |
| 26 | S-14 | 26-28 | 24 | 9 | 14 18 | S-14 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, little (+) Gravel, trace (+) Silt, wet | | 3 | | 26 | -16.2 | | |
| 27 | | | | | 9 9 | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 8 | 9 6 | S-15 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace (+) Gravel, trace (+) Silt, wet | | 3 | | | | Well Screen | |
| 29 | | | | | 5 4 | | | | | | | | |
| 30 | S-16 | 30-32 | 24 | 2 | 6 5 | S-16 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace Gravel, trace Silt, wet | | 0.5 | | SAND | | | |
| 31 | | | | | 7 6 | | | | | | | | |
| 32 | S-17 | 32-34 | 24 | 12 | 6 6 | S-17 : Medium dense, gray (GLEY 1, 4/10Y) fine to coarse SAND, trace Gravel, trace Silt, wet | | 2 | | | | Filter Sand | |
| 33 | | | | | 12 16 | | | | | | | | |

REMARKS

4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 36 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-26 feet bgs; Filter Sand placed in annulus from 0-2, 3-24 and 25-36 feet bgs; Bentonite Seals installed from 2-3 and 24-25 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-313D
SHEET: 3 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 34 | S-18 | 34-36 | 24 | 11 | 15 13 18 18 | S-18 : Dense, gray (GLEY 1, 5/10Y) fine to coarse SAND, little Gravel, trace (+) Silt, wet | | 1 | | | | | | Well Screen |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | End of exploration at 36 feet. | | | | | 36 | -26.2 | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-313D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-314D
SHEET: 1 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.13
Final Boring Depth (ft.): 34
Date Start - Finish: 5/27/2014 - 6/3/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | |
|-------------------------|-------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 6/4/14 | 11:00 | 8.99 | 1 Day |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth (ft.) Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|--|-------------|-----------------|--------|------|---|--------------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Gray brown (10YR, 5/2) fine SAND, little Gravel, little Silt, dry, moderate oil-like odor | 1 2 3 | 61.2 | | | CRUSHED STONE 10.9 | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine to coarse SAND, little Gravel, little Silt, trace Brick, trace Slag, oil-like staining, moderate oil-like odor, moist | | 108 | | Mod | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine to coarse SAND, little Gravel, little Silt, trace Brick, trace Slag, oil-like staining, moderate oil-like odor, moist | | 175 | | Mod | | |
| 4 | S-4 | 6-8 | 24 | 8 | 15 16 15 9 | S-4 : Dense, light gray (GLE Y 1, 7/N) fine to medium SAND, some Gravel, trace Silt, slight oil-like odor, wet | 4 | 9 | | Sigt | | |
| 5 | S-5 | 8-10 | 24 | 11 | 7 6 6 9 | S-5 : Medium dense, very dark brown (10YR, 3/1) fine to coarse SAND and GRAVEL, little Silt, slight oil-like odor, wet | | 26 | | Sigt | FILL | |
| 6 | S-6 | 10-12 | 24 | 6 | 4 4 WOH 1 | S-6 : Loose, dark grayish brown (10YR, 4/2) fine to medium SAND, little Silt, trace Gravel, trace Brick, wet | | 3.6 | | | | |
| 7 | S-7 | 12-14 | 24 | 1 | 3 5 11 7 | S-7 : Medium dense, black (10YR, 2/1) fine SAND and SILT, strong oil-like odor, oil-like staining, wet | | 136 | | Strg | | PVC Riser Filter Sand |
| 8 | S-8 | 14-16 | 24 | 12 | 3 3 3 3 | S-8 : Loose, black (10YR, 2/1) fine to medium SAND, some Silt, trace Gravel, strong oil-like odor, oil-like staining, slight sheen, wet | | 426 | | | | |

REMARKS

1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.

2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer

3 - 2" of crushed stone present at the surface.

4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-314D

TEST BORING LOG



**National Grid
642 Allens Avenue
Providence, Rhode Island**

**EXPLORATION NO.: GZ-314D
SHEET: 2 of 3
PROJECT NO: 33554
REVIEWED BY: MSK**

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 15 | 3 2 3 3 | S-9 : 0-7" Black (10YR, 2/1) fine to medium SAND, some Silt, trace Gravel, strong oil-like odor, oil-like staining, slight sheen, wet 7"-15" Black (10YR, 2/1) fine SAND and SILT, some Gravel, oil-like coating, strong oil-like odor, wet | | 408 230 | Strg Strg | | | | |
| 17 | | | | | | | | | | | FILL | | |
| 18 | S-10 | 18-20 | 24 | 19 | 3 2 1 1 | S-10 : 0-3" Black (10YR, 2/1) fine SAND and SILT, some Gravel, oil-like coating, strong oil-like odor, wet 3"-7" Very dark brown (10YR, 3/1) fine to coarse SAND, some Gravel, little Silt, strong oil-like odor, oil-like coating, wet 7"-19" Very dark greenish gray (GLEY 1, 4/5GY) SILTY CLAY, trace Shells, slight oil-like odor, wet | | 142 190 | Strg Strg | | | | |
| 19 | | | | | | | | 18 | | Silt | 19 | -7.9 | |
| 20 | S-11 | 20-22 | 24 | 0 | WOH 1 1 | S-11 : Very soft cohesive soils, no recovery | | NM | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 20 | 3 2 3 2 | S-12 : Medium stiff, greenish gray (GLEY 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | 5 | 24 | | Silt | | | Bentonite Seal |
| 23 | | | | | | | | | | | | | Filter Sand |
| 24 | S-13 | 24-26 | 24 | 5 | WOH | S-13 : Very soft, greenish gray (GLEY 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 19 | | Silt | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 15 | WOH | S-14 : Very soft, greenish gray (GLEY 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 10 | | Silt | ORGANIC SILT | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 2 | WOH | S-15 : Very soft, greenish gray (GLEY 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 2.5 | | Silt | | | |
| 29 | | | | | | | | | | | | | |
| 30 | S-16 | 30-32 | 24 | 23 | WOH | S-16 : Very soft, very dark greenish gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, trace Wood fibers, faint organic odor, wet | | 2.3 | | Silt | | | |
| 31 | | | | | | | | | | | | | |
| 32 | S-17 | 32-34 | 24 | 17 | WOH | S-17 : Very soft, very dark greenish gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, trace Wood fibers, faint organic odor, wet | | 1.4 | | Silt | | | Well Screen |
| 33 | | | | | | | | | | | | | |

REMARKS

5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 34 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-24 feet bgs; Filter Sand placed in annulus from 22-34 feet bgs; Bentonite Seals installed from 22-23 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-314D**

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-314D
SHEET: 3 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---------------------------------------|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 34 | | | | | | End of exploration at 34 feet. | | | | | 34 | ORGANIC SILT | -22.9 | |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
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| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-314D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-315D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10.17
Final Boring Depth (ft.): 30
Date Start - Finish: 5/28/2014 - 6/4/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|--------|-------|-------------|------------|
| 6/4/14 | 11:30 | 8.99 | 2 Hrs |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Depth(ft.) Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|-------------|-----------------|--------|------|---|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Gray brown (10YR, /2) fine to coarse SAND, little Gravel, little Silt, dry, slight oil-like odor | 1 2 3 | 41 | | | CRUSHED STONE | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/1) fine to medium SAND, little Silt, little Gravel, little (-) Ash, trace Slag, trace Brick, trace coal, slight oil-odor, moist, oil-like staining | | 38 | | Sigt | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/1) fine to medium SAND, little Silt, little Gravel, little (-) Ash, trace Slag, trace Brick, trace coal, slight oil-odor, moist, oil-like staining | | 37 | | Sigt | | |
| 4 | S-4 | 6-8 | 24 | 8 | 6 4 3 4 | S-4 : 0-5" Yellow brown (10YR, 5/6 fine SAND and SILT, trace gravel, slight oil-like odor, wet 5"-8" Black (10YR, 2/1) fine to coarse SAND, some Silt, slight oil-like odor, black oil-like staining, wet | 4 | 102 106 | | Sigt | | |
| 5 | S-5 | 8-10 | 24 | 8 | 3 2 2 3 | S-5 : Loose green gray (GLE Y 1, 10Y) fine SAND, some Silt, moderate oil-like odor, slight sheen, wet, top 2" strong oil-like odor | | 186 | | Sigt | FILL | |
| 6 | S-6 | 10-12 | 24 | 5 | 3 2 2 2 | S-6 : Loose, very dark green gray (GLE Y 1, 3/10Y) fine SAND, some Silt, slight sheen, strong oil-like odor, wet | | 188 | | Strg | | |
| 7 | S-7 | 12-14 | 24 | 11 | 2 1 2 2 | S-7 : Very loose, very dark green gray (GLE Y 1, 3/10Y) fine to medium SAND, some Gravel, some Silt, slight sheen, strong oil-like odor, wet | | 152 | | Strg | | |
| 8 | S-8 | 14-16 | 24 | 13 | 4 3 3 4 | S-8 : 0-7" Very dark green gray (GLE Y 1, 3/10Y) fine to medium SAND, some Gravel, some Silt, slight sheen, strong oil-like odor, wet, oil-like coating (4"-5") | | 90 114 | | | | PVC Riser |

REMARKS
 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - 2" Crushed stone present at the surface
 4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-315D

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-315D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 7 | 2 3 4 7 | 7"-13" Black (10YR, 2/1) fine to coarse SAND, trace Shells, trace Gravel, oil-like coating, strong oil-like odor, wet | | | Strg | | | | |
| 17 | | | | | | S-9 : Loose, black (1-YR, 2/1) fine to coarse SAND, little Gravel, oil-like coated, strong oil-like odor, wet, from 4"-7" color changes to more yellow brown (10YR, 3/4) | | 6.6 | | | FILL | | |
| 18 | S-10 | 18-20 | 24 | 17 | 2 2 1 1 | S-10 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | | | | 18 | -7.8 | |
| 19 | | | | | | | 5 | | | Sigt | | | Bentonite Seal |
| 20 | S-11 | 20-22 | 27 | 9 | WOH | S-11 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 20 | | | | | Filter Sand |
| 21 | | | | | | | | | | Sigt | | | |
| 22 | S-12 | 22-24 | 24 | 22 | WOH | S-12 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 1.5 | | | | | |
| 23 | | | | | | | | | | Sigt | | | |
| 24 | S-13 | 24-26 | 24 | 24 | WOH | S-13 : Very soft, very dark green gray (GLEY 1, 3/10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet | | 0.9 | | | ORGANIC SILT | | |
| 25 | | | | | | | | | | Sigt | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 24 | WOH | S-14 : Very soft, very dark green gray (GLEY 1, 4/10Y) ORGANIC SILT, trace Shells, trace fine Sand, trace Wood, wet | | 1.6 | | | | | |
| 27 | | | | | | | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 24 | WOH | S-15 : Very soft, dark green gray, ORGANIC SILT, trace Shells, 1/8" seam of fine Sand at 18", wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -19.8 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS
 5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" diameter, schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19.5-30 feet bgs; Bentonite Seals installed from 18-19.5 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-315D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:30 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-318D
SHEET: 1 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Truck Mounted
Rig Model: CME
Drilling Method:
 Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11.13
Final Boring Depth (ft.): 34
Date Start - Finish: 5/23/2014 - 6/2/2014

H. Datum:
 NAD 83
V. Datum:
 NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|-------|-------------|------------|
| 6/10/14 | 12:00 | 7.48 | 8 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description Elev.(ft.) | Equipment Installed | | | |
|------------|--------|-------------|-----------|-----------|-------------------|---|-------------|-----------------|--------|------|--|--|-------------------|--|------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : 0-6" Light brown (10YR, 5/6) fine to medium SAND, little Silt, little Gravel, dry 6"-12" Brown (10YR, 4/4) fine to coarse SAND, some Gravel, little Silt, dry 12"-24" brown (10YR, 4/4) fine to coarse SAND, some Gravel, trace Silt, trace Brick, some Coal, slight oil-like odor, moist/dry | 1 2 3 | ND ND 7.1 | | | ← Stand Pipe | | | | |
| | S-2 | 2-4 | N/A | N/A | | | | | | | | S-2 : Brown (10YR, 4/4) fine to coarse SAND, some Gravel, trace Silt, trace Brick, trace Coal, slight oil-like odor, moist | 30.5 | | Sigt |
| | S-3 | 4-6 | N/A | N/A | | | | | | | | | | | |
| 6 | S-4 | 6-8 | 24 | 12 | 7 5 6 6 | S-4 : Medium dense, dark greenish gray (GLE Y 1, 4/56Y) fine SAND, some Gravel, little Silt, strong oil-like odor, wet | 4 | 186 | | FILL | | | | | |
| 7 | S-5 | 8-10 | 24 | 7 | 5 4 3 3 | | | | | | S-5 : Loose, dark greenish gray (GLE Y 1, 4/56Y) fine SAND, some Gravel, (0-1" Silt lense) strong oil-like odor, wet | | 210 | | Strg |
| 10 | S-6 | 10-12 | 24 | 1 | 3 3 3 1 | S-6 : Loose, dark gray (GLE Y 1, 4/N) fine to medium SAND, some Gravel, trace Silt, strong oil-like odor, wet | | 185 | | Strg | | | | | |
| 12 | S-7 | 12-14 | 24 | 14 | 3 3 4 5 | | | | | | S-7 : 0-9" Dark gray (GLE Y 1, 4/N) fine to medium SAND, little Silt, strong oil-like odor, wet 9"-11" Dark gray (GLE Y 1, 4/N) fine to coarse SAND and GRAVEL, trace Silt, strong oil-like odor, wet 11"-14" Dark gray (GLE Y 1, 4/N) fine to medium SAND, little Silt, strong oil-like odor, wet | | 118 344 221 | | Strg |
| 14 | S-8 | 14-16 | 24 | 1 | 5 1 4 3 | S-8 : Loose, dark gray (GLE Y 1, 4/N) fine to coarse SAND, some Gravel, trace Silt, moderate oil-like odor, wet | | 76 | | | | | | | |

REMARKS

- 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
- 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
- 3 - Poly sheeting observed at 6" and 12" bgs.
- 4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-318D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-318D
SHEET: 2 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|--|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 9 | 3 2 2 2 | S-9 : 0-5" Black (10YR, 2/1) fine to coarse SAND, some Gravel, some Silt, moderate oil-like odor, wet | | | | Mod | | | |
| 17 | | | | | | 5"-9" Black (10YR, 2/1) fine SAND and SILT, little Gravel, moderate oil-like odor, wet | | | | Mod | FILL | | |
| 18 | S-10 | 18-20 | 24 | 0 | WOH 1 1 | S-10 : Very loose, no recovery | | | | | | | |
| 19 | | | | | | | 5 | | | | | | |
| 20 | S-11 | 20-22 | 24 | 6 | WOH 1 1 | S-11 : Very soft, dark gray (GLEY 1, 4/N) ORGANIC SILT, trace Gravel, trace Shells, slight Organic odor, wet | | | | | 20 | -8.9 | |
| 21 | | | | | | | | | | | | | |
| 22 | S-12 | 22-24 | 24 | 18 | 11 3 4 3 | S-12 : Medium stiff, dark gray (GLEY 1, 4/N) ORGANIC SILT, trace gravel, trace fibers, (15"-16" Band of Gravel) slight Organic odor, wet | | | | | | | Bentonite Seal |
| 23 | | | | | | | | | | | | | Filter Sand |
| 24 | S-13 | 24-26 | 24 | 19 | WOH 2 | S-13 : Very soft, dark gray (GLEY 1, 4/N) ORGANIC SILT, slight Organic odor, wet | | | | | | | |
| 25 | | | | | | | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 19 | 2 3 3 2 | S-14 : Medium stiff, very dark gray (GLEY 1, 4/N) ORGANIC SILT, trace fibers, slight Organic odor, wet | | | | | | | |
| 27 | | | | | | | | | | | ORGANIC SILT | | |
| 28 | S-15 | 28-30 | 24 | 24 | WOH 2 1 3 | S-15 : Soft, very dark gray (GLEY 1, 4/N) ORGANIC SILT, trace fibers, slight Organic odor, wet | | | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | S-16 | 30-32 | 24 | 6 | WOH 2 5 9 | S-16 : Medium stiff, very dark gray (GLEY 1, 4/N) ORGANIC SILT, little Gravel, slight Organic odor, wet | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 32 | S-17 | 32-34 | 24 | 19 | 6 2 6 8 | S-17 : Medium stiff, very dark gray (GLEY 1, 4/N) ORGANIC SILT, little Gravel, trace Shells, slight Organic odor, wet | | | | | | | |
| 33 | | | | | | | | | | | | | Well Screen |

REMARKS

5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 34 feet bgs, 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-24 feet bgs; Filter Sand placed in annulus from 24-34 feet bgs; Bentonite Seals installed from 21-22 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-318D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:32 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-318D
SHEET: 3 of 3
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---------------------------------------|--------|-----------------|--------|------|-------------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 34 | | | | | | End of exploration at 34 feet. | | | | | 34 | ORGANIC SILT | -22.9 | |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | | |
| 47 | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | |
| 49 | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-318D

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-319D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.20
Final Boring Depth (ft.): 30
Date Start - Finish: 5/27/2014 - 6/2/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|--------|-------|-------------|------------|
| 6/4/14 | 11:40 | 7.38 | 2 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|-------------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Dark brown (10YR, 4/4) fine to medium SAND, little Gravel, trace Gravel, dry | 1 2 3 | 8.1 | | | CRUSHED STONE | 13.0 | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Dark brown (10YR, 3/2) fine to medium SAND, little Silt, trace Gravel, trace Slag, trace Ash, trace Brick, trace Coal, moist, slight oil-like odor | | 6.8 | | Sigt | | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Dark brown (10YR, 3/2) fine to medium SAND, little Silt, trace Gravel, trace Slag, trace Ash, trace Brick, trace Coal, moist, slight oil-like odor | | 7.4 | | Sigt | | | |
| 4 | S-4 | 6-8 | 24 | 10 | 9 6 8 7 | S-4 : Medium dense, dark brown (10YR, 3/1), fine to coarse SAND, some Gravel, trace Silt, trace Slag, trace Ash, trace Coal, trace Brick, slight oil-like odor, bands of blue staining, wet | 4 | 18.8 | | Sigt | | | |
| 5 | S-5 | 8-10 | 24 | 12 | 7 6 19 28 | S-5 : Medium dense, dark brown (10YR, 3/1), fine to coarse SAND, some Gravel, trace Silt, trace Slag, trace Ash, trace Coal, trace Brick, slight oil-like odor, bands of blue staining, wet | | 17.8 | | Sigt | FILL | | |
| 6 | S-6 | 10-12 | 24 | 14 | 16 19 19 23 | S-6 : Dense, gray brown (10YR, 5/2) fine to coarse SAND, little (+) Gravel, trace (-) Silt, trace Coal, trace Wood chips, blue staining, slight oil-like odor, wet | | 1.8 | | Sigt | | | PVC Riser |
| 7 | S-7 | 12-14 | 24 | 12 | 21 23 19 23 | S-7 : Dense, gray (10YR, 4/1) fine to coarse SAND, some Silt, little Gravel, slight oil-like odor, wet | | 4.8 | | Sigt | | | |
| 8 | S-8 | 14-16 | 24 | 10 | 14 10 11 16 | S-8 : Medium dense, brown (10YR, 5/1) fine to medium SAND, some Silt, little Gravel, wet | | ND | | | | | |

REMARKS
 1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
 2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
 3 - 2" Crushed stone present at the surface.
 4 - Water table observed at 6 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-319D**

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:34 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-319D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed | |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---------------------|-------------|---------------------|-------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 14 | 20 19 16 18 | S-9 : Dense, gray (10YR, 5/1) fine to coarse SAND, little Gravel, little Silt, trace Wood chips, slight blue staining, wet | | | | | | | Bentonite Seal | |
| 17 | | | | | | | | | | | | | | |
| 18 | S-10 | 18-20 | 24 | 16 | 21 30 17 19 | S-10 : Dense, gray (10YR, 5/1) fine to medium Sand, little Silt, trace Gravel, wet | | | | | FILL | | Filter Sand | |
| 19 | | | | | | | 5 | | | | | | | |
| 20 | S-11 | 20-22 | 24 | 18 | 10 9 12 13 | S-11 : 0-5" Dark gray (10YR, 4/1) fine to coarse SAND, some Gravel, little Silt, slight blue staining, wet | | | | | | | Well Screen | |
| 21 | | | | | | 5"-18" Gray (10YR, 4/1) fine to medium SAND, little Silt, some Gravel, wet | | | | | 21 | -7.8 | | |
| 22 | S-12 | 22-24 | 24 | 18 | 20 19 20 14 | S-12 : Dense, gray (20YR, 5/1) fine to coarse SAND, some Silt, little Gravel, wet | | | | | | | Well Screen | |
| 23 | | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 18 | 14 9 12 14 | S-13 : Medium dense, gray (10YR, 5/1) fine SAND, some Silt, trace Gravel, wet | | | | | SAND AND SILT | | Well Screen | |
| 25 | | | | | | | ND | | | | | | | |
| 26 | S-14 | 26-28 | 24 | 12 | 13 8 19 15 | S-14 : 0-8" Gray (10YR, 5/1) fine SAND, some Silt, trace Gravel, wet 8"-12" Gray brown (10YR, 5/2) medium to course SAND, little Gravel, trace Silt, trace Organics, wet | | | | | | 26 | -12.8 | Well Screen |
| 27 | | | | | | | ND | | | | | | | |
| 28 | S-15 | 28-30 | 24 | 12 | 12 11 12 16 | S-15 : Medium dense, gray brown (10YR, 5/2) fine to coarse SAND, little Gravel, trace Silt, wet | | | | | SAND | | Well Screen | |
| 29 | | | | | | | ND | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | | 30 | -16.8 | Well Screen |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | Well Screen | |
| 33 | | | | | | | | | | | | | | |

REMARKS

5 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 30 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 18-30 feet bgs; Bentonite Seals installed from 16-18 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-319D**

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-320D
SHEET: 1 of 2
PROJECT NO: 33554
REVIEWED BY: MSK

Logged By: MJB/SN
Drilling Co.: Geologic
Foreman: Dave Sheldon

Type of Rig: Track Mounted
Rig Model: CME
Drilling Method:
Vactor/Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 16.03
Final Boring Depth (ft.): 30
Date Start - Finish: 5/28/2014 - 6/5/2014

H. Datum:
NAD 83
V. Datum:
NAVD 88

Hammer Type: Safety Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D. (in.): 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|---------|------|-------------|------------|
| 6/11/14 | 9:10 | 8.99 | 6 Days |

| Depth (ft) | Sample | | | | Blows (per 6 in.) | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Depth (ft.) | Stratum Description Elev.(ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-------------------|---|--------|-----------------|--------|------|-------------|--------------------------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 1 | S-1 | 0-2 | N/A | N/A | | S-1 : Gray brown (10YR, 4/2) fine to coarse SAND, little Gravel, little Silt, trace Brick, trace Slag, dry | 1 2 | ND | | | | | Stand Pipe |
| 2 | S-2 | 2-4 | N/A | N/A | | S-2 : Black (10YR, 2/2) fine to medium SAND, little Gravel, little Slag, trace Silt, trace Ash, trace clinker, trace Brick, moist | | ND | | | | | |
| 3 | S-3 | 4-6 | N/A | N/A | | S-3 : Black (10YR, 2/2) fine to medium SAND, little Gravel, little Slag, trace Silt, trace Ash, trace clinker, trace Brick, moist | | ND | | | | | |
| 4 | S-4 | 6-8 | 24 | 12 | 8 5 5 7 | S-4 : Loose, gray brown (10YR, 5/2) fine SAND, some Silt, trace Gravel, wet | | ND | | | | | |
| 5 | S-5 | 8-10 | 24 | 8 | 8 6 9 7 | S-5 : 0-3" Brown (10YR, 5/3) fine SAND and SILT, little Gravel, wet 3"-8" Gray (GLE Y 1, 5/N) fine to medium SAND, some Silt, some Gravel, wet | | ND | | | | | |
| 6 | S-6 | 10-12 | 24 | 0 | 18 19 10 8 | S-6 : No Recovery | | NM | | | | | PVC Riser |
| 7 | S-7 | 12-14 | 24 | 0 | 8 12 13 13 | S-7 : No recovery, sheen on spoon | | NM | | | | | |
| 8 | S-8 | 14-16 | 24 | 7 | 12 6 2 3 | S-8 : Loose, black (10YR, 2/1) fine to coarse SAND and GRAVEL, trace Brick, trace Silt, sheen, moderate oil-like odor, wet | | 195 | | | | | |

REMARKS
1 - The upper 6 feet was cleared using an air knife and soil vactor truck. Soil samples were collected from the sidewalls. Therefore, blows and SPT values are not applicable for the vacuum excavated portion of the boring.
2 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using a miniRae 3000 Photoionization Detector (PID) equipped with a 10.6 eV Lamp calibrated to a 100 ppmv isobutylene standard. ND indicates reading below the instruments detection limit of approximately 0.1 ppmv. N/A-Not Applicable, NM-Not Measured, bgs-below ground surface, WOH-Weight of Hammer
3 - Water table observed at 7 feet bgs.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Exploration No.:
GZ-320D**

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE: 12/28/2015; 2:41:35 PM

TEST BORING LOG



National Grid
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-320D
SHEET: 2 of 2
PROJECT NO: 33554
REVIEWED BY: MSK


| Depth (ft) | Sample | | | | Blows per 6 in. | Sample Description Modified Burmister | Remark | Field Test Data | Visual | Odor | Stratum Description | Elev. (ft.) | Equipment Installed |
|------------|--------|-------------|-----------|-----------|-----------------|---|--------|-----------------|--------|------|---------------------|-------------|---------------------|
| | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 16 | S-9 | 16-18 | 24 | 13 | 3 6 7 3 | S-9 : Medium dense, black (10YR, 2/1) fine to coarse SAND, some Slag, little Gravel, trace Brick, slight oil-like odor, wet | | 20 | Mod | | | | |
| 17 | | | | | | | | | Sght | | FILL | | |
| 18 | S-10 | 18-20 | 24 | 8 | 5 2 2 3 | S-10 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, some Organics, slight oil-like odor, wet | | 4.1 | | | 18 | -2.0 | |
| 19 | | | | | | | 4 | | Sght | | | | ← Bentonite Seal |
| 20 | S-11 | 20-22 | 24 | 21 | 1 1 2 2 | S-11 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Roots, trace Organics, wet | | 2.5 | | | | | ← Filter Sand |
| 21 | | | | | | | | | | | ORGANIC SILT | | |
| 22 | S-12 | 22-24 | 24 | 24 | WOH 5 6 | S-12 : Soft, dark gray (10YR, 4/1) ORGANIC SILT, trace Gravel, trace Organic, wet | | 1.8 | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | S-13 | 24-26 | 24 | 19 | 3 6 8 14 | S-13 : Medium Stiff, brown (10YR, 5/3) fine SAND and SILT, wet | | ND | | | 24 | -8.0 | |
| 25 | | | | | | | | | | | | | Well Screen |
| 26 | S-14 | 26-28 | 24 | 12 | 3 9 16 15 | S-14 : 0-6" Brown (10YR, 5/3) fine SAND and SILT, wet 6"-12" Gray (10YR, 5/1) SILT and fine SAND, wet | | ND | | | | | |
| 27 | | | | | | | | | | | SAND AND SILT | | |
| 28 | S-15 | 28-30 | 24 | 16 | 8 11 12 19 | S-15 : Medium Stiff, gray (10YR, 5/1) SILT and fine SAND, wet | | ND | | | | | |
| 29 | | | | | | | | | | | | | |
| 30 | | | | | | End of exploration at 30 feet. | | | | | 30 | -14.0 | |
| 31 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |

REMARKS


4 - A groundwater monitoring well of the following construction was installed: 10 feet of 2" Diameter, Schedule 40, flush joint, threaded, 10-slot PVC well screen at 34 feet bgs. 2" Diameter, Schedule 40, flush joint, threaded PVC Riser installed from 0-20 feet bgs; Filter Sand placed in annulus from 19-30 feet bgs; Bentonite Seals installed from 18-19 feet bgs. Remaining annulus filled with filter sand. Well protected with a stand pipe.

See Log Key for explanation of sample description, identification procedures, and visual and odor impacts. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.


**Exploration No.:
GZ-320D**


| | | | | | | | | | |
|--|---------------------|------------|---|----------|----------------------|-------------------------------------|--------------|---|--------------------|
| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | BORING NO. SB-01 Page No. 1 of 2 | | | |
| Client | Kiewit | | GS Elev. N/A ft. | | | # of SPT Samples 13 | | | |
| Contractor | Geologic | | Boring Coordinates N/A | | | Length of Rock core - ft | | | |
| Driller | Dave | | EQUIPMENT | | | SAMPLER CORE | | | |
| WAI Rep. | Shawn Ingram (Roux) | | Type | | | Split Spoon | | | |
| DATE | Start | Finish | Size I.D. | | | Total Depth of Boring 71 ft. | | | |
| | 6/3/2015 | 6/3/2015 | 4" 2" | | | | | | |
| Boring Location | See attached plan | | Hammer Wt. Hyd. | | | # of Shelby Tubes 1 | | | |
| | | | Hammer Fall | | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description | |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | | |
| 5 | SS-1 | 6-8 | 24 | 10 | 12/4/3/3 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SP); ~80% fine to medium sand; ~15% fine gravel; <5% fines; gray; petroleum odor. | |
| 10 | SS-2 | 9-11 | 24 | 0 | 4/2/2/3 | | | No Recovery. | |
| 15 | SS-3 | 14-16 | 24 | 2 | 5/3/2/1 | | | NARROWLY GRADED GRAVEL (GW); fine gravel; <5% sand and fines; gray; petroleum odor and sheen. | |
| 20 | SS-4 | 19-21 | 24 | 28 | woh(18")/2 | | ORGANIC SILT | SILT (ML); homogeneous organic silt; <10% fine sand; dark gray. | |
| | US-1 | 22-23 | 30 | 15 | Push | | | Shelby tube undisturbed sample. | |
| 25 | SS-5 | 24-26 | 24 | 18 | 1/woh/1/1 | | | WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% fine to medium subrounded sand; ~20% subangular fine gravel; ~10% fines; dark gray. | |
| 30 | SS-6 | 29-31 | 24 | 12 | 2/13/12/7 | | | WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% fine to medium subrounded sand; ~20% subangular fine gravel; ~10% fines; dark gray. | |
| 35 | SS-7 | 34-36 | 24 | 14 | 13/9/10/6 | | SILT | WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% fine to medium subrounded sand; ~20% subangular fine gravel; ~10% fines; brown. | |
| 40 | SS-8 | 39-41 | 24 | 15 | 5/6/8/10 | | | SILT (ML); homogeneous silt; <5% sand; brown. | |
| Notes: | | | | | | PROJECT Providence LNG | | | Borehole No. SB-01 |


| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|-------|--------------------|------------|----------|-----------|---------|--|--------------------|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 45 | SS-9 | 44-46 | 24 | 18 | 5/6/9/10 | | SILT (ML); homogeneous silt; <5% fine sand; light gray. | |
| 50 | SS-10 | 49-51 | 24 | 16 | 9/6/11/9 | | SILT (ML); homogeneous silt; <5% fine sand and fine gravel; light gray. | |
| 55 | SS-11 | 54-56 | 24 | 18 | 5/7/10/9 | | WIDELY GRADED SAND (SW); fine to medium subrounded sand; >5% fines; light brown and light gray. | |
| 60 | SS-12 | 59-61 | 24 | 13 | 7/9/11/9 | | WIDELY GRADED SAND (SW); fine to medium subrounded sand; >5% fines; light brown and light gray. | |
| 70 | SS-13 | 69-71 | 24 | 20 | 8/8/12/10 | | WIDELY GRADED SAND (SW); ~80% fine to medium subrounded sand; ~15% fine gravel; >5% fines; light brown and light gray. | |
| 75 | | | | | | | Bottom of Boring, 71 feet | |
| 80 | | | | | | | | |
| 85 | | | | | | | | |
| Notes: | | | | | | PROJECT | Providence LNG | Borehole No. SB-01 |

| | | | | | | | | |
|--|---------------------|------------|---|----------|----------------------|-------------------------------------|--------------|--|
| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | BORING NO. SB-02 Page No. 1 of 2 | | |
| Client | Kiewit | | GS Elev. N/A ft. | | | # of SPT Samples 14 | | |
| Contractor | Geologic | | Boring Coordinates N/A | | | Length of Rock core - ft | | |
| Driller | Dave | | EQUIPMENT | | | SAMPLER CORE | | |
| WAI Rep. | Shawn Ingram (Roux) | | CASING | | | Type Split Spoon | | |
| DATE | Start | Finish | Type | | | Total Depth of Boring 71 ft. | | |
| | 6/2/2015 | 6/2/2015 | Size I.D. | | | Hammer Wt. Hyd. Hyd. | | |
| Boring Location | See attached plan | | Hammer Fall | | | # of Shelby Tubes 0 | | |
| | | | Hammer Fall | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | |
| 5 | SS-1 | 6-8 | 24 | 9 | 9/6/6/4 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 10 | SS-2 | 9-11 | 24 | 4 | 3/3/3/4 | | | NARROWLY GRADED GRAVEL (GP); mostly fine subangular gravel; <5% fines; brown and gray. |
| 15 | SS-3 | 14-16 | 24 | 5 | 2/woh/1/1 | | | NARROWLY GRADED GRAVEL WITH SAND (GP); ~60% fine subangular gravel; ~40% fine to coarse, subrounded sand; gray; petroleum odor. |
| 20 | SS-4 | 19-21 | 24 | 7 | 12/6/6/3 | | | WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% fine to medium sand; ~30% fine subangular gravel; ~10% fines; dark gray. |
| 25 | SS-5 | 24-26 | 24 | 8 | 12/6/6/3 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to medium sand; ~25% fine subangular gravel; <5% fines; dark gray. |
| 30 | SS-6 | 29-31 | 24 | 10 | 5/3/3/3 | | | WIDELY GRADED SAND (SW); Mostly fine to medium sand; <5% fines and fine subangular fine gravel; gray. |
| 35 | SS-7 | 34-36 | 24 | 18 | 3/1/woh/9 | | ORGANIC SILT | WIDELY GRADED SAND (SW) and SILT WITH SAND (ML); Mostly fine to medium sand; <5% fines; A stratified layer (4 inches) organic silt; dark gray. |
| 40 | SS-8 | 39-41 | 24 | 12 | 13/9/23/17 | | SAND | WIDELY GRADED SAND WITH GRAVEL; ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; >5% fines; brown. |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-02 |

| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|-------|--------------------|------------|----------|-------------|------------------------|--------|--|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 45 | SS-9 | 44-46 | 24 | 10 | 9/7/7/7 | | SAND | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 50 | SS-10 | 49-51 | 24 | 10 | 6/6/8/7 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light gray and light brown. |
| 55 | SS-11 | 54-56 | 24 | 8 | 8/7/8/7 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light gray and light brown. |
| 60 | SS-12 | 59-61 | 24 | 12 | 3/3/7/7 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; dark brown. |
| 65 | SS-13 | 64-66 | 24 | 12 | 13/16/17/16 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 70 | SS-14 | 69-71 | 24 | 12 | 12/15/18/18 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; brown. |
| 75 | | | | | | | | Bottom of Boring, 71 feet |
| 80 | | | | | | | | |
| 85 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-02 |

| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | | | Project Providence LNG Location Providence, RI Project No. 21524028 | | | | BORING NO. SB-04 Page No. 1 of 2 | |
|--|---------------------|------------|----------|---|----------------------|------------------------|------------------|--|--------|
| Client | Kiewit | | | GS Elev. | N/A ft. | | # of SPT Samples | 10 | |
| Contractor | Geologic | | | Boring Coordinates | | N/A | | Length of Rock core | - ft |
| Driller | Dave | | | EQUIPMENT | CASING | SAMPLER | CORE | Total Depth of Boring | 51 ft. |
| WAI Rep. | Shawn Ingram (Roux) | | | Type | | Split Spoon | | # of Shelby Tubes | 2 |
| DATE | Start | Finish | | Size I.D. | 4" | 2" | | | |
| | 6/1/2015 | 6/1/2015 | | Hammer Wt. | Hyd. | Hyd. | | | |
| Boring Location | See attached plan | | | Hammer Fall | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description | |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | | |
| 5 | SS-1 | 6-8 | 24 | 5 | 7/4/4/3 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; gray. | |
| 10 | SS-2 | 9-11 | 24 | 5 | 8/6/5/4 | | | WIDELY GRADED SAND WITH SILT (SW-SM); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; gray; petroleum odor. | |
| 15 | SS-3 | 14-16 | 24 | 10 | 7/4/3/3 | | | SILT WITH GRAVEL (ML); medium plasticity organic silt; >5% fine subangular gravel; dark gray. | |
| 20 | SS-4 | 19-21 | 24 | 11 | 3/1/2/1 | | | WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray. Shelby tube undisturbed sample. | |
| 25 | US-1 | 21-23 | 30 | 24 | Push | | | | |
| 25 | SS-5 | 24-26 | 24 | 17 | woh(12")/2/1 | | ORGANIC SILT | WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray. | |
| 30 | SS-6 | 29-31 | 24 | 18 | 8/6/5/4 | | | WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray. Shelby tube undisturbed sample. | |
| 30 | US-2 | 31-33 | 30 | 22 | Push | | | | |
| 35 | SS-7 | 34-36 | 24 | 24 | 6/6/5/4 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium sand; ~20% fine subangular fine gravel; gray. | |
| 40 | SS-8 | 39-41 | 24 | 24 | 1/2/3/9 | | | SILT WITH SAND (ML); ~85% medium plasticity organic silt; ~15% fine sand; dark gray. | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-04 | |

| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | Project Providence LNG Location Providence, RI Project No. 21524028 | BORING NO. SB-04 Page No. 2 of 2 | | | | | |
|--|--------------------|---|-------------------------------------|----------|----------------------|------------------------|--------|--|
| Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | |
| 45 | SS-9 | 44-46 | 24 | 14 | 24/18/16/14 | | SAND | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; brown and gray. |
| 50 | SS-10 | 49-51 | 24 | 8 | 23/12/13/13 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; brown and gray. |
| 55 | | | | | | | | Bottom of Boring, 51 feet |
| 60 | | | | | | | | |
| 65 | | | | | | | | |
| 70 | | | | | | | | |
| 75 | | | | | | | | |
| 80 | | | | | | | | |
| 85 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-04 |

| | | | | | | | | |
|--|---------------------|---|--------------------------|-------------------------------------|------------------------------|--------------------|--------------|--|
| WEIDLINGER ASSOCIATES, INC. CONSULTING ENGINEERS  27 WORMWOOD, SUITE 200 BOSTON, MA 02210-1625 Phone: (617) 250-4100 | | Project Providence LNG Location Providence, RI Project No. 21524028 | | BORING NO. SB-06 Page No. 1 of 3 | | | | |
| Client | Kiewit | | GS Elev. _____ ft. | | # of SPT Samples 19 | | | |
| Contractor | Geologic | | Boring Coordinates _____ | | Length of Rock core _____ ft | | | |
| Driller | Ray and Dave | | | | | | | |
| WAI Rep. | Shawn Ingram (Roux) | | EQUIPMENT | CASING | SAMPLER | CORE | | |
| DATE | Start | Finish | Type | | Split Spoon | | | |
| | 7/16/2015 | 7/17/2015 | Size I.D. | 4" | 2" | | | |
| Boring Location | | | Hammer Wt. | Hyd. | Hyd | | | |
| | | | Hammer Fall | | | | | |
| Borehole Depth (ft) | Sample Information | | | | | Remarks | Strata | Sample Description |
| | No. | Depth (ft) | Pen (in) | Rec (in) | Blows per 6" (RQD %) | | | |
| 5 | SS-1 | 0-2 | 24 | 18 | 6/9/12/11 | | FILL | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light brown. |
| | SS-2 | 4-6 | 24 | 15 | 5/3/3/2 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light brown. |
| 10 | SS-3 | 9-10.5 | 18 | 8 | 6/4/5/78 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; light brown; Stone/concrete foundation prevented advancing spoon past 10.5 ft. concrete |
| 15 | SS-4 | 14-16 | 24 | 10 | 7/4/5/4 | | | WIDELY GRADED SAND WITH GRAVEL (SW); ~80% medium to coarse subrounded sand; ~20% fine subangular gravel; black; petroleum odor. |
| 20 | SS-5 | 19-21 | 24 | 24 | w.o.h | | ORGANIC SILT | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| | US-1 | 21-23 | 30 | 25 | Push | | | Shelby tube. Undisturbed |
| 25 | US-2 | 24-26 | 30 | 23 | Push | | | Shelby tube. Undisturbed |
| | US-3 | 27-29 | 30 | 25 | Push | | | Shelby tube. Undisturbed |
| 30 | SS-6 | 29-31 | 24 | 24 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 35 | SS-7 | 34-36 | 24 | 5 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; shell fragment clogged the spoon and impacted recovery; dark gray. |
| 40 | SS-8 | 39-41 | 24 | 24 | w.o.h | | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| Notes: | | | PROJECT Providence LNG | | | Borehole No. SB-06 | | |

| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|--|--------------------|------------|----------|----------|------------------------|--------------|---|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 45 | | SS-9 | 44-46 | 24 | 24 | w.o.h | ORGANIC SILT | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 50 | | SS-10 | 49-51 | 24 | 24 | w.o.h | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 55 | | SS-11 | 54-56 | 24 | 24 | woh/woh/3/3 | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 60 | | SS-12 | 59-61 | 24 | 24 | woh/12/6/3 | | 59-60 - SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. 60-60.5 - WIDELY GRADED SAND (SW); ~95% F to M sand; gray 60.5-61 - SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 65 | | SS-13 | 64-66 | 24 | 15 | 3/2/5/4 | | 64-65 - WIDELY GRADED SAND (SW); ~95% F to C sand; gray 65-66 - SILT (ML); ~90% silt; ~10% fine sand; dark brown. |
| 70 | | SS-14 | 69-71 | 24 | 6 | 8/6/5/4 | | WIDELY GRADED SAND (SW); ~95% F to C sand; gray |
| 75 | | SS-15 | 74-76 | 24 | 1 | 3/2/3/4 | | SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. |
| 80 | | SS-16 | 80-81 | 24 | 24 | woh/woh/3/4 | | 70-80 - SILT (ML); ~95% organic silt; black. 80-81 - SILT (ML); ~95% organic silt; dark gray. |
| 85 | | SS-17 | 84-86 | 24 | 20 | 6/11/9/12 | SAND | WIDELY GRADED SAND (SW); ~95% F to M sand; gray |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-06 |

| Depth (ft) | | Sample Information | | | | Remarks | Strata | Sample Description |
|------------|-------|--------------------|------------|----------|-----------|------------------------|--------|---|
| | | No. | Depth (ft) | Pen (in) | Rec (in) | | | |
| 90 | SS-18 | 89-91 | 24 | 0 | 7/7/12/7 | | SAND | No recovery |
| 100 | SS-19 | 99-101 | 24 | 18 | 9/9/14/22 | | | WIDELY GRADED SAND (SW); ~95% F to M sand; light brown. |
| 105 | | | | | | | | BOTTOM OF BORING, 101 FT |
| 110 | | | | | | | | |
| 115 | | | | | | | | |
| 120 | | | | | | | | |
| 125 | | | | | | | | |
| 130 | | | | | | | | |
| Notes: | | | | | | PROJECT Providence LNG | | Borehole No. SB-06 |

RECORD OF BOREHOLE B-201 (KW-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/15/16
 DATE COMPLETED: 1/18/16

COORDS: N: 260,792.90 E: 356,903.17
 GS ELEVATION: 11.7 ft
 WEATHER: Cloudy
 TEMPERATURE: 34 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 1.7 ft
 ELEVATION W.L.: 10.0 ft
 DATE W.L.: 1/18/2016
 TIME W.L.: 08:00

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|---------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | 10 | 0.0 - 9.0ft Brown, fine to coarse SAND, some silt, trace gravel (FILL). | SM | | 0.0 | S1 | SS | 12-15-20-15 | 35 | 1.1 2.0 | Top 4": Gray, moist, dense, fine SAND, little silt, (SM). Pp=1536psf Bottom 9": Reddish brown, moist, dense, fine to coarse SAND, little silt, trace gravel, (SM). PID=0.1ppm |
| 5.0 | 5 | | | | 5.0 | S2 | SS | 8-4-6-5 | 10 | 0.8 2.0 | Dark brown, wet, loose, fine to coarse SAND, some silt, trace gravel, (SM). Slight hydrocarbon odor. PID=0.0ppm |
| 9.0 | 10.0 | 9.0 - 19.4ft Dark gray, silty fine to coarse SAND, trace to little gravel. | SM | | 9.0 | S3 | SS | 12-9-11-10 | 20 | 0.3 2.0 | Dark gray, wet, medium dense, fine to coarse SAND, some silt, trace gravel, (SM). Strong hydrocarbon odor and visible sheen. PID=12.0ppm |
| 14.0 | 15.0 | | | | 14.0 | S4 | SS | 10-4-1-1 | 5 | 0.5 2.0 | Gray, wet, loose, silty SAND, trace gravel, (SM). Strong hydrocarbon odor and visible sheen. PID=3.0ppm |
| 16.0 | 5 | | | | 16.0 | S5 | SS | 1-WOH- WOH-WOH | 0 | 1.4 2.0 | Dark gray, wet, very loose, silty medium to coarse SAND, little fine to medium gravel, (SM). Strong hydrocarbon odor and visible sheen. PID=1.5ppm |
| 19.0 | 20.0 | | | | 19.0 | S6 | SS | 9-4-2-2 | 6 | 0.7 2.0 | Top 5": Gray, wet, loose, silty fine to coarse SAND, little gravel, (SM). Strong hydrocarbon odor. Bottom 3": Dark gray to black, loose, organic SILT, (OH). Pp=1000psf, Tv = 100 psf. |
| 21.0 | -10 | | | | 21.0 | S7 | VANE | WOP-WOP- WOP-WOP | 0 | 0.3 2.0 | Dark gray, wet, very loose, organic SILT, some shell fragments, (OH). 0.5" seam of dark gray, silty fine to coarse SAND, some shell fragments, some gravels, (SM), PID=0.4ppm V1: (21.5-22) Su = 133 psf; Remolded Su = 300 psf V2: (22.5-23) Su = 250 psf; Remolded Su = 359 psf |
| 23.0 | 25.0 | 19.4 - 34.0ft Dark gray, organic SILT to organic silty fine SAND, trace shells. | OH | | 23.0 | S8 | SS | 20-16-10-8 | 26 | 2.0 2.0 | Top 12": Dark gray, wet, medium dense, silty fine SAND, trace shell fragments, (SM). Bottom 12": Dark gray, wet, very stiff, organic SILT, trace shell fragments, (OH). PID=0.1ppm |

Log continued on next page

- Fill (made ground)
- USCS Silty Sand (SM)
- USCS High Plasticity Organic silt or clay with shells (OHSH)
- USCS Well-graded Sand (SW)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-201 (KW-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/15/16
 DATE COMPLETED: 1/18/16

COORDS: N: 260,792.90 E: 356,903.17
 GS ELEVATION: 11.7 ft
 WEATHER: Cloudy
 TEMPERATURE: 34 deg F

SHEET 2 of 3
 INCLINATION: 90
 DEPTH W.L.: 1.7 ft
 ELEVATION W.L.: 10.0 ft
 DATE W.L.: 1/18/2016
 TIME W.L.: 08:00

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|------------|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | -15 | | OH | | 25.0 | S9 | SS | 5-3-4-3 | 7 | 2.0 2.0 | Top 6": Dark gray, wet, loose, silty fine to coarse SAND, trace fine gravel, trace shell fragments, (SM). Bottom 18": Dark gray, wet, medium stiff, organic SILT, trace fine gravel, trace shell fragments, (OH). |
| 29.0 | | | | | S10 | SS | 4-2-12-100/2" | 14 | 0.9 1.7 | Dark gray, wet, medium dense, silty fine to coarse SAND, some shell fragments, trace fine gravel, (SM). PID=0.0ppm | |
| 34.0 | -20 | 34.0 - 61.0ft Dark brown, fine to coarse SAND, trace gravel, trace silt, (Outwash). | SW | | 34.0 | S11 | SS | 18-22-20-23 | 42 | 0.9 2.0 | Brown, wet, hard, SILT, little fine sand, trace shells, (ML). 1.5" thick seam of gravel. PID=0.0ppm |
| 39.0 | | | | | | S12 | SS | 13-10-24-23 | 34 | 0.8 2.0 | Dark brown, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SW). PID=0.0ppm |
| 44.0 | | | | | | S13 | SS | 32-26-20-16 | 46 | 0.6 2.0 | Dark brown, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SP). PID=0.0ppm |
| 49.0 | | | | | | | SS | 18-10-12-13 | 22 | 0.0 2.0 | NO RECOVERY. |
| 50.0 | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)
 USCS High Plasticity Organic silt or clay with shells (OHSH)
 USCS Well-graded Sand (SW)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-201 (KW-1)

SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/15/16
 DATE COMPLETED: 1/18/16

COORDS: N: 260,792.90 E: 356,903.17
 GS ELEVATION: 11.7 ft
 WEATHER: Cloudy
 TEMPERATURE: 34 deg F

INCLINATION: 90
 DEPTH W.L.: 1.7 ft
 ELEVATION W.L.: 10.0 ft
 DATE W.L.: 1/18/2016
 TIME W.L.: 08:00

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|----------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | | x x x x x | | | SS | 18-10-12-13 | 22 | 0.0 2.0 | |
| -40 | | | | x x x x x | | | | | | | |
| 55.0 | | | SW | x x x x x | 54.0 | S14 | SS | 24-17-19-22 | 36 | 1.0 2.0 | Reddish brown, wet, dense, fine to coarse SAND, trace fine gravel, trace silt, (SW). PID=0.0ppm |
| -45 | | | | x x x x x | | | | | | | |
| 60.0 | | | | x x x x x | 59.0 | S15 | SS | 11-11-20-24 | 31 | 2.0 2.0 | Upper 18": Orange to reddish brown, wet, dense, medium to coarse SAND, trace gravel, (SP). Bottom 6": Gray, wet, dense, fine SAND, little silt, (SM). |

Boring completed at 61.0 ft

Notes:

- Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDER NH 2011.GDT 5/10/16

| | | | |
|--------------------|----------------------|--|----------------------------|
| Fill (made ground) | USCS Silty Sand (SM) | USCS High Plasticity Organic silt or clay with shells (OHSH) | USCS Well-graded Sand (SW) |
|--------------------|----------------------|--|----------------------------|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 1 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|-----------------------|-----------------|--------|----------------|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | 10 | 0.0 - 19.0ft Dark grayish brown, fine to coarse SAND to silty fine to medium SAND, trace to little gravel (FILL). | SP | [Cross-hatch pattern] | 0.0 | S1 | SS | 10-10-25-21 | 35 | 1.1 2.0 | Top 2": Gray, damp, dense, coarse GRAVEL, some fine sand, (GP). Middle 5": Brown, moist, dense, silty fine to medium SAND, trace asphalt, trace gravel, (SM). Bottom 6": Dark brown, moist, dense, fine to coarse SAND, trace asphalt, trace gravel, (SP) PID=0.1ppm |
| 5.0 | 5 | | | | 5.0 | S2 | SS | 30-23-23-23 | 46 | 1.0 2.0 | Dark grayish brown, moist, dense, medium to coarse SAND, some gravel, trace concrete (up to 1"), (SP). PID=0.5ppm |
| 10.0 | 0 | | | | 9.0 | S3 | SS | 41-21-13-9 | 34 | 0.7 2.0 | Dark grayish brown, wet, dense, fine to coarse SAND, little gravel, (SW). Slight hydrocarbon odor. PID=2.3ppm |
| 15.0 | -5 | | | | 14.0 | S4 | SS | 18-13-13-13 | 26 | 0.9 2.0 | Dark gray, wet medium dense, silty fine to medium SAND, little gravel, (SM). Slight hydrocarbon odor. PID=32.5ppm |
| 20.0 | -10 | 19.0 - 69.0ft Dark brown to dark gray, organic SILT to fine to medium sandy CLAY, trace shells and wood fragments. | OH | [Wavy pattern] | 19.0 | S5 | SS | 1-1-1-1 | 2 | 1.3 2.0 | Dark brown, moist, soft, fine to medium sandy CLAY, (CH). Tv=300, 250, 360psf Pp=2000, 1700, 1500psf |
| 25.0 | -15 | | | | 21.0 | S6 | VANE | 1-1-1-1 | 2 | 2.0 2.0 | Dark brown, wet, soft, fine to medium sandy CLAY, trace shell fragments, (CH). Tv=250, 200, 200psf Pp=1500, 1000, 1200psf V1: (21.5-22) Su = 550 psf; Remolded Su = 200 psf V2: (22.5-23) Su = 583 psf; Remolded Su = 416 psf |
| 30.0 | -20 | | | | 23.0 | S7 | SS | 1-1-1-2 | 2 | 2.0 2.0 | Dark brown, wet, soft, fine to medium sandy CLAY, (CH). Tv=250, 200, 200psf Pp=1500, 1700, 2000psf |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 2 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|---|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | -15 | | | OH | | | | | | | |
| 30.0 | -20 | | | | 29.0 | S8 | SS | WOH-2-5-7 | 7 | 2.0 2.0 | Top 14": Dark gray, wet, soft, organic SILT, trace fine sand, (OH). Bottom 10": Dark grayish brown, wet, loose, silty medium to coarse SAND, (SM). Tv=200, 250, 250psf Pp=2000, 1800, 1800psf |
| 35.0 | -25 | | | | 34.0 | S9 | SS | 1-2-1-2 | 3 | 2.0 2.0 | Top 8": Dark gray, wet, soft, organic SILT, trace wood fragments, trace fine sand, trace shell fragments, (OH). Tv=600, 550, 350psf Pp=2500, 2000, 2250psf Bottom 16": Dark gray, wet, soft, sandy SILT, trace wood fragments, trace shell fragments, (ML). |
| 40.0 | -30 | | | | 39.0 | S10 | SS | 3-2-3-3 | 5 | 2.0 2.0 | Dark gray, moist, soft, SILT, trace shell fragments, (ML). Tv=350, 650, 300psf Pp=2000, 1700, 2000psf |
| 45.0 | -35 | | | | 41.0 | S11 | VANE | 4-2-3-3 | 5 | 1.5 2.0 | Dark gray, moist, soft, clayey SILT, trace fine sand, trace shell fragments, (MH). Tv=300, 360, 200psf Pp=1000, 1000, 1000psf PID=0.6ppm V3: (41.5-42) Su = 350 psf; Remolded Su = 183 psf V4: (42.5-43) Su = 200 psf; Remolded Su = 50 psf |
| 50.0 | | | | | 49.0 | S12 | SS | 4-3-3-3 | 6 | 2.0 2.0 | Dark gray, moist, soft, organic SILT, trace wood, trace shell fragments, (OH). Tv=480, 400, 450psf, Pp=2500, 2600, 3000psf PID=0.6ppm |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHSH)
- USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 3 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | -40 | | | | | S12 | SS | 4-3-3-3 | 6 | $\frac{2.0}{2.0}$ | |
| | | | | | 54.0 | S13 | SS | 2-2-2-3 | 4 | $\frac{2.0}{2.0}$ | Dark gray, moist, soft, organic SILT, trace wood fragments, trace shell fragments, (OH). Tv=350, 300, 400psf Pp=2500, 2500, 2500psf |
| 55.0 | -45 | | | | 56.0 | S14 | VANE | WOP-WOP-WOP-WOP | 0 | $\frac{1.5}{2.0}$ | Dark gray, moist, very soft, organic SILT, trace wood fragments, trace roots, trace shell fragments, (OH). Tv=100, 250, 200psf Pp=2000, 1500, 1000psf V5: (56.5-57) Su = 1801 psf; Remolded Su = 995 psf V6: (57.5-58) Su = 2844 psf; Remolded Su = 1801 psf |
| | | | OH | | 59.0 | S15 | SS | 2-3-4-6 | 7 | $\frac{2.0}{2.0}$ | Dark gray, moist, medium stiff, organic SILT, trace wood fragments, trace roots, trace fine sand, (OH). Tv=240, 320, 300psf Pp=2000, 3200, 3500psf |
| | | | | | 64.0 | S16 | SS | 7-9-9-9 | 18 | $\frac{1.7}{2.0}$ | Top 5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace roots, trace fine sand, (OH). Tv=250, 200, 200psf Pp=2500, 2000, 2000psf Middle 10.5": Dark gray, wet, loose, silty fine to coarse SAND, (SM). Bottom 3.5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace fine sand, (OH). Pp=3000, 2500, 3500psf |
| | | 69.0 - 81.0ft Dark gray, fine to coarse SAND to silty fine to medium SAND, trace gravel (outwash). | | | 69.0 | S17 | SS | 13-18-17-14 | 35 | $\frac{0.7}{2.0}$ | Dark gray, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SP). |
| | | | SP | | 74.0 | | SS | 14-17-14-12 | 31 | $\frac{0.0}{2.0}$ | NO RECOVERY. Piece of gravel in tip. |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHS)
 USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-202 (KW-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 81.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/20/16
 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61
 GS ELEVATION: 10.8 ft
 WEATHER: Clear, windy
 TEMPERATURE: 18-25 deg F

SHEET 4 of 4
 INCLINATION: 90
 DEPTH W.L.: 0.2 ft
 ELEVATION W.L.: 10.6 ft
 DATE W.L.: 1/21/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|------------------|--------------------|--------|-------------|----------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | -65 | | | [Dotted Pattern] | | | SS | 14-17-14-12 | 31 | 0.0 2.0 | |
| 80.0 | | | SP | [Dotted Pattern] | 79.0 | S18 | SS | 15-12-11-8 | 23 | 1.5 2.0 | Dark gray, wet, medium dense, silty fine to medium SAND, trace gravel, (SM). |

Boring completed at 81.0 ft

- Notes:**
 1. Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDER NH 2011.GDT 5/10/16

| | | |
|--------------------|--|------------------------------|
| Fill (made ground) | USCS High Plasticity Organic silt or clay with shells (OHSH) | USCS Poorly-graded Sand (SP) |
|--------------------|--|------------------------------|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



RECORD OF BOREHOLE B-203 (KW-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

SHEET 1 of 4
 INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | | |
|--------------|-----------------|--|------|--------------------|--|--------|----------------|-------------------|------------|--|--|--|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | | |
| 0.0 | | 0.0 - 24.0ft Gray to black, fine to coarse SAND to silty SAND, trace gravel (FILL). | SM | | 0.0 | S1 | SS | 18-18-15-17 | 33 | 1.6 2.0 | Top 10": Grayish light brown, frozen, dense, fine to coarse SAND, trace gravel, trace silt (SW). Bottom 9": Dark brown, moist, dense, fine to medium SAND, little silt, (SM). N value may not be representative of in situ density/ consistency, due to frozen soil. | | | |
| | 4.0 | | | | S2 | SS | 24-10-12-11 | 22 | 0.9 2.0 | Top 5.5": Black, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP). Bottom 5": Light gray, moist, medium dense, fine to medium SAND, trace gravel, (SP). | | | | |
| | 9.0 | | | | | SS | 11-8-6-13 | 14 | 0.0 2.0 | NO RECOVERY. | | | | |
| | 14.0 | | | | S3 | SS | 22-10-6-4 | 16 | 0.8 2.0 | Top 5": Light gray, moist, medium dense, silty fine SAND, trace concrete, trace gravel, (SM). PID=74.6ppm Bottom 5": Dark gray to black, wet, medium dense, fine to coarse SAND, trace gravel, trace silt (SW). Strong hydrocarbon odor and visible sheen. PID=702ppm | | | | |
| | 19.0 | | | | S4 | SS | 11-4-3-3 | 7 | 0.6 2.0 | Black, wet, loose, fine to coarse SAND, some fine gravel, (SW). Strong hydrocarbon odor and visible sheen. PID=78.1ppm | | | | |
| | 24.0 | | | | S5 | SS | 9-2-2-2 | 4 | 0.7 2.0 | Dark gray, moist, soft, organic SILT, trace fine sand, (OH). Tv=300, 200, 200psf Pp=2000, 1500, 1800psf V1: (24.5-25) Su = 995 psf; Remolded Su = 521 psf | | | | |
| 25.0 | -15 | | | | 24.0 - 54.0ft Dark gray, organic SILT, trace fine sand, trace shells. | OH | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHSH)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-203 (KW-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

SHEET 2 of 4
 INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|---------------------|---|------------|---|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | OH | | S5 | SS | 9-2-2-2 | 4 | 0.7 2.0 | V2: (25.5-26) Su = 1043 psf; Remolded Su = NA | |
| | | | | | 26.0 | S6 | VANE | WOP-WOP- WOP-WOP | | 0 | 1.6 2.0 | Top 9": Dark gray, wet, very soft, organic SILT, little fine to coarse sand, trace gravel, (OH). Bottom 10": Dark gray, moist, very soft, organic SILT, trace fine sand, (OH). |
| | | | | | 29.0 | S7 | SS | 1-1-3-2 | | 4 | 1.6 2.0 | Dark gray, moist, soft, organic SILT, trace fine sand, trace shell fragments, (OH). Tv=300, 300, 250psf Pp=2000, 1500, 1800psf |
| 30.0 | -20 | | | | 31.0 | S8 | VANE | WOP-WOP- WOP-WOP | | 0 | 1.5 2.0 | Dark gray, wet, very soft, organic SILT, trace fine sand, trace shell fragments, (OH). Tv=100, 250, 150psf Pp=2000, 1000, 1500psf V3: (31.5-32) Su = 853 psf; Remolded Su = 758 psf V4: (32.5-33) Su = 1042 psf; Remolded Su = 664 psf |
| | | | | | 34.0 | S9 | SS | 1-2-3-2 | | 5 | 0.5 2.0 | Dark gray, wet, medium stiff, organic SILT, trace fine to medium sand, trace shell fragments, (OH). Pp=1000, 1500, 1000psf |
| 35.0 | -25 | | | | 39.0 | S10 | SS | 1-1-1-2 | | 2 | 0.3 2.0 | Dark gray, wet, soft, organic SILT, some clay, trace fine sand, trace shell fragments, (OH). Pp=1000, 1000, 1000psf |
| | | | | | 44.0 | S11 | SS | 1-2-3-4 | | 5 | 1.4 2.0 | Dark gray, moist, medium stiff, organic SILT, trace fine sand, (OH). Tv=200, 150, 200psf Pp=1500, 1500, 1000psf |
| 45.0 | -35 | | | | 49.0 | S12 | SS | 7-11-11-11 | | 22 | 0.4 2.0 | Black, wet, medium dense, silty fine to medium SAND, some organics (wood fragments, roots), (SM). PID=9.0ppm |
| 50.0 | -40 | | | | | | | | | | | |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-203 (KW-6)

SHEET 3 of 4

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | OH | | | S12 | SS | 7-11-11-11 | 22 | 0.4 2.0 | |
| 55.0 | -45 | 54.0 - 91.0ft Gray, fine to coarse SAND to silty SAND, trace to some gravel, (Outwash). | | | 54.0 | S13 | SS | 22-26-32-40 | 58 | 0.7 2.0 | Top 2.5": Dark gray, wet, very dense, fine to medium SAND, (SP). Middle 2.5": Dark gray, wet, very dense, GRAVEL, trace medium to coarse sand, (GP). Bottom 3": Dark brown, wet, very dense, GRAVEL, trace organics, trace fine to coarse sand, trace silt, (GP). |
| 60.0 | -50 | | | | 59.0 | S14 | SS | 17-9-11-12 | 20 | 0.3 2.0 | Brownish gray, wet, medium dense, fine to coarse SAND, some gravel, some silt, (SM). |
| 65.0 | -55 | | SM | | 64.0 | S15 | SS | 20-8-7-9 | 15 | 0.6 2.0 | Gray, wet, medium dense, fine to coarse SAND, little gravel, trace silt, (SP). |
| 70.0 | -60 | | | | 69.0 | S16 | SS | 14-14-6-4 | 20 | 0.9 2.0 | Dark gray, moist, very stiff, medium to coarse sandy SILT, trace fine gravel, (ML). |
| 75.0 | -65 | | | | 74.0 | S17 | SS | 27-17-17-18 | 34 | 0.8 2.0 | Gray, wet, dense, fine to coarse SAND, little silt, trace gravel, (SM). |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-203 (KW-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Outside Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/25/16
 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54
 GS ELEVATION: 9.9 ft
 WEATHER: Clear, windy
 TEMPERATURE: 25 deg F

SHEET 4 of 4
 INCLINATION: 90
 DEPTH W.L.: 4.1 ft
 ELEVATION W.L.: 5.8 ft
 DATE W.L.: 1/26/2016
 TIME W.L.: 07:50

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | | | | | | S17 | SS | 27-17-17-18 | 34 | $\frac{0.8}{2.0}$ | |
| | | | | | | | | | | | |
| 80.0 | -70 | | | | 79.0 | S18 | SS | 38-11-7-7 | 18 | $\frac{0.6}{2.0}$ | Gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). Driller noted possible cobbles. |
| | | | SM | | | | | | | | |
| 85.0 | -75 | | | | | | | | | | |
| | | | | | | | | | | | |
| 90.0 | -80 | | | | 89.0 | S19 | SS | 15-13-18-28 | 31 | $\frac{0.5}{2.0}$ | Gray, wet, medium dense, fine to coarse SAND, some silt, little gravel, (SM). |

Boring completed at 91.0 ft

- Notes:**
 1. Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

| | | |
|--------------------|--|----------------------|
| Fill (made ground) | USCS High Plasticity Organic silt or clay with shells (OHSH) | USCS Silty Sand (SM) |
|--------------------|--|----------------------|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



RECORD OF BOREHOLE B-204 (KW-10)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

SHEET 1 of 5
 INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 14.0ft Brown to black, fine to coarse SAND, some to little gravel, some silt (FILL). | | SP | 0.0 | S1 | SS | 15-8-7-6 | 15 | $\frac{1.1}{2.0}$ | Brown, moist (frozen), medium dense, GRAVEL, some fine to coarse sand, some silt, (GM). N value may not be representative of in situ density/ consistency, due to frozen soil. |
| 4.0 | | | | | 4.0 | S2 | SS | 14-5-5-12 | 10 | $\frac{0.4}{2.0}$ | Black, wet, loose, fine to coarse SAND, little gravel, trace asphalt, some silt, (SP). |
| 9.0 | | | | | 9.0 | S3 | SS | 9-8-8-11 | 16 | $\frac{0.9}{2.0}$ | Top 3": Brown, moist, medium dense, silty fine SAND, little gravel, (SM). Bottom 8": Black, wet, medium dense, fine to coarse SAND, some gravel, (SP). Strong hydrocarbon odor and visible sheen. PID=5.4ppm |
| 14.0 | -5 | 14.0 - 55.5ft Dark brown, organic SILT, some to trace fine sand, trace shells, and wood fragments. | | OH | 14.0 | S4 | SS | 5-12-10-9 | 22 | $\frac{1.3}{2.0}$ | Top 4": Brown, wet, very stiff, organic SILT, trace fine sand, (OH). Bottom 11": Brownish gray, moist, fine to medium SAND, little gravel, trace wood fragments, (SP). Strong hydrocarbon odor and visible sheen. PID=12ppm |
| 19.0 | | | | | 19.0 | S5 | VANE | WOH-1-1-1 | 2 | $\frac{0.3}{2.0}$ | Dark gray, wet, soft, organic SILT, little wood fragments, trace fine sand, (OH). Hydrocarbon odor. Tv=150, 200, 200psf Pp=1000, 1000, 1500psf V1: (19.5-20) Su = 711 psf; Remolded Su = 332 psf V2: (20.5-21) Su = 1138 psf; Remolded Su = 948 psf |
| 22.0 | | | | | 22.0 | S6 | SS | WOP-WOP-WOP-WOP | 0 | $\frac{1.5}{2.0}$ | Dark brown, wet, very soft, organic SILT, some fine sand, (OH). Strong "rotting egg" odor. Tv=250, 300, 250psf Pp=1500, 2000, 2000psf |
| 24.0 | | | | | 24.0 | S7 | SS | 4-3-4-4 | 7 | $\frac{2.0}{2.0}$ | Top 12": Dark brown, wet, medium stiff, organic SILT, little gravel, (OH). Bottom 12": Dark brown, moist, medium stiff, organic SILT, trace wood fragments, trace fine sand, (OH). Tv=250, 200, 250psf Pp=2000, 2000, |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHS)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)

SHEET 2 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|-----------------|----|-------------------|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | OH | | S7 | SS | 4-3-4-4 | 7 | $\frac{2.0}{2.0}$ | 2000psf | |
| | | | | | 29.0 | S8 | SS | 1-WOH-1-2 | 1 | $\frac{1.5}{2.0}$ | Dark brown, moist, very soft, organic SILT, trace shell fragments, trace fine sand, (OH). Tv=100, 150, 150psf Pp=1000, 1000, 1000psf | |
| 30.0 | -20 | | | | 31.0 | S9 | VANE | WOP-WOP-WOP-WOP | 0 | $\frac{1.6}{2.0}$ | Dark gray, moist, very soft, organic SILT, some fine sand, trace wood fragments, (OH). Tv=100, 100, 100psf Pp=100, 100, 100psf V3: (31.5-32) Su = 1090 psf; Remolded Su = 568 psf V4: (32.5-33) Su = 1422 psf; Remolded Su = 1327 psf | |
| | | | | | 33.0 | S10 | SS | 2-2-2-2 | 4 | $\frac{1.7}{2.0}$ | Top 8": Dark brown, wet, soft, organic SILT, some fine to coarse sand, trace gravel, trace wood fragments, (OH). Tv= 100, 100, 100psf Pp=100, 100, 100psf Bottom 12": Dark gray, moist, soft, organic SILT, trace gravel, trace fine to medium sand, (OH). Tv=250, 200, 250psf Pp=2000, 2500, 2000psf | |
| 35.0 | -25 | | | | | | | | | | | |
| | | | | | 39.0 | S11 | SS | 7-8-9-10 | 17 | $\frac{1.3}{2.0}$ | Dark gray, moist, medium dense, silty fine to medium SAND, trace gravel, (SM). Hydrocarbon odor and visible sheen. PID=0.5ppm | |
| 40.0 | -30 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 45.0 | -35 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 50.0 | -40 | | | | | | | | | | | |

Log continued on next page

- Fill (made ground)
- USCS High Plasticity Organic silt or clay with shells (OHS)
- USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)


SHEET 3 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area




DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|---|-----------------|--------|----------------|-------------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | OH |  | | | | | | | |
| 55.0 | -45 | 55.5 - 101.0ft Gray, silty fine to coarse SAND, trace to some gravel (outwash). | | | 54.0 | S12 | SS | 8-24-22-21 | 46 | 2.0 2.0 | Top 14": Black, moist, hard, organic SILT, little wood fragments, trace gravel, (OL). Tv=450, 400, 400psf Pp=3000, 3500, 3000psf Middle 4": Dark brownish gray, moist, hard, fine to medium sandy SILT, (ML). Tv=150, 200, 150psf Pp=1000, 1000, 1500psf Bottom 6": Gray, wet, dense, fine to coarse SAND, trace gravel, (SP). |
| 60.0 | -50 | | | | 59.0 | S13 | SS | 8-14-14-13 | 28 | 0.8 2.0 | Gray, wet, medium dense, silty fine to medium SAND, trace gravel, (SM). |
| 65.0 | -55 | | SM | | 64.0 | S14 | SS | 9-14-15-16 | 29 | 1.2 2.0 | Gray, wet, medium dense, silty fine SAND, (SM). |
| 70.0 | -60 | | | | 69.0 | S15 | SS | 12-12-13-13 | 25 | 1.3 2.0 | Gray, wet, medium dense, fine SAND, trace gravel, trace silt, (SP). |
| 75.0 | -65 | | | | 74.0 | S16 | SS | 20-14-13-12 | 27 | 0.5 2.0 | Gray, wet, medium dense, silty fine to coarse SAND, trace gravel, (SM). |

Log continued on next page

-  Fill (made ground)
-  USCS High Plasticity Organic silt or clay with shells (OHSH)
-  USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)

SHEET 4 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|------------|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | | | | SM | | S16 | SS | 20-14-13-12 | 27 | 0.5 2.0 | |
| | | | | | 79.0 | S17 | SS | 11-16-13-20 | 29 | 0.5 2.0 | Gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). |
| 80.0 | -70 | | | | | | | | | | |
| | | | | | 84.0 | S18 | SS | 50/2" | R | 0.2 0.2 | Dark gray, wet, very dense, GRAVEL, trace fine to coarse sand, (GP). |
| 85.0 | -75 | | | | | | | | | | |
| | | | | | 89.0 | S19 | SS | 19-15-15-13 | 30 | 0.2 2.0 | Gray, wet, very stiff, fine to coarse sandy SILT, little gravel, (ML). |
| 90.0 | -80 | | | | | | | | | | |
| | | | | | | | | | | | |
| 95.0 | -85 | | | | | | | | | | |
| | | | | | | | | | | | |
| 99.0 | -90 | | | | S20 | SS | 6-4-6-10 | 10 | 0.0 2.0 | No recovery; resampled (recovery 0.5'/2.0'). Gray, wet, loose, fine to coarse SAND, some gravel, trace silt, (SP). | |
| 100.0 | -90 | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS High Plasticity Organic silt or clay with shells (OHS)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-204 (KW-10)


SHEET 5 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 1/28/16
 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51
 GS ELEVATION: 9.6 ft
 WEATHER: Cloudy
 TEMPERATURE: 40 deg F

INCLINATION: 90
 DEPTH W.L.: 4.4 ft
 ELEVATION W.L.: 5.2 ft
 DATE W.L.: 1/28/2016
 TIME W.L.: 07:30




| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|-------------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 100.0 | | | SM |  | | S20 | SS | 6-4-6-10 | 10 | <u>0.0</u> 2.0 | |

Boring completed at 101.0 ft

Notes:

- Borehole backfilled with cuttings to ground surface.

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDBER NH 2011.GDT 5/10/16

| | | | |
|--|---|--|--|
|  Fill (made ground) |  USCS High Plasticity Organic silt or clay with shells (OHS) |  USCS Silty Sand (SM) | |
|--|---|--|--|

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: SAD
 CHECKED BY: JDL
 DATE: 2/19/16



RECORD OF BOREHOLE B-205 (PL-5)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Southwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/1/16
 DATE COMPLETED: 2/1/16

COORDS: N: 260,902.81 E: 357,253.32
 GS ELEVATION: 8.5 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 50 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 7.0 ft
 ELEVATION W.L.: 1.5 ft
 DATE W.L.: 2/1/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------|---|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | |
| 0.0 | | 0.0 - 19.0ft Light to dark brown, gravelly fine to coarse SAND to fine to coarse SAND, some gravel, trace to some silt, (FILL). | SM | | 0.0 | S1 | SS | 6-6-13-21 | 19 | 1.3 2.0 | Light brown, dry, medium dense, fine to coarse SAND, some gravel, trace silt, (SW). PID = 0.1 ppm | | |
| 5 | | | | | | | | | | | | | |
| 4.0 | | | | | | | | S2 | SS | 12-16-16-21 | 32 | 1.0 2.0 | Top 4": Brown, moist, dense, fine to coarse SAND, some gravel, trace silt, (SW). Bottom 8": Light brown, moist, dense, fine to medium SAND, some gravel, little silt, (SM). PID = 1.0 ppm 5.0-9.0 ft: Tight material - Difficult to drive casing |
| 7.0 | | | | | | | | | | | | | 7.0 ft: Strong hydrocarbon odor coming from the borehole |
| 9.0 | | | | | | | | S3 | SS | 25-30-28-16 | 58 | 1.3 2.0 | Dark brown, wet, very dense, gravelly fine to coarse SAND, some silt, (SM). Strong hydrocarbon odor. PID = 3.9 ppm |
| 14.0 | | | | | | | | S4 | SS | 15-14-11-10 | 25 | 1.1 2.0 | Dark brown, wet, medium dense, gravelly fine to coarse SAND, some silt, (SM). Slight hydrocarbon odor. PID = 3.7 ppm |
| 19.0 | | 19.0 - 51.0ft Brown, silty fine to coarse SAND to SAND, some to trace gravel, some silt, (Outwash). | SM | | 19.0 | S5 | SS | 9-13-16-21 | 29 | 0.8 2.0 | Light brown, wet, medium dense, gravelly fine to coarse SAND, trace silt, trace clay, (SP-SM). PID = 0.5 ppm (very windy) | | |
| 24.0 | | | | | | | | S6 | SS | 21-19-18-16 | 37 | 1.3 2.0 | Top 5": Dark brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). Bottom 10": Brown, wet, dense, fine to coarse SAND, trace gravel, little |
| 25.0 | | | | | | | | | | | | | |

Log continued on next page

Fill (made ground) USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-205 (PL-5)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Southwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/1/16
 DATE COMPLETED: 2/1/16

COORDS: N: 260,902.81 E: 357,253.32
 GS ELEVATION: 8.5 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 50 deg F

SHEET 2 of 3
 INCLINATION: 90
 DEPTH W.L.: 7.0 ft
 ELEVATION W.L.: 1.5 ft
 DATE W.L.: 2/1/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|------------|--|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SM | | S6 | SS | 21-19-18-16 | 37 | 1.3 2.0 | silt, (SM). PID = 0.4 ppm (very windy) | |
| | | | | | | | | | | | | |
| | -20 | | | | | | | | | | | |
| 29.0 | | | | | | S7 | SS | 6-7-7-7 | 14 | 0.8 2.0 | Brown, wet, medium dense, fine to coarse SAND, some gravel, trace silt, trace clay, (SP-SM). PID = 0.5 ppm (windy) | |
| | | | | | | | | | | | | |
| | -25 | | | | | | | | | | | |
| 34.0 | | | | | | S8 | SS | 5-6-5-6 | 11 | 1.0 2.0 | Brown, wet, medium dense, fine to coarse SAND, some gravel, some silt, trace clay, (SM). PID = 0.6 ppm | |
| | | | | | | | | | | | | 36.0 ft: Driller adds drilling mud to maintain open hole |
| | -30 | | | | | | | | | | | |
| 39.0 | | | | | | S9 | SS | 15-24-16-12 | 40 | 0.6 2.0 | Brown, wet, dense, fine to coarse SAND, little gravel, little silt, little clay, (SM). Occasional 1/8" thick lenses of silt. PID = 0.7 ppm | |
| | | | | | | | | | | | | |
| | -35 | | | | | | | | | | | |
| 44.0 | | | | | S10 | SS | 10-8-12-16 | 20 | 1.1 2.0 | Brown, wet, medium dense, silty fine to coarse SAND, little gravel, (SM). Alternating layers of sandy silt (3-4") and silty fine to coarse sand (2-3"). Gravel lense at 44'8". PID = 0.0 ppm | | |
| | | | | | | | | | | | | |
| | -40 | | | | | | | | | | | |
| 49.0 | | | | | S11 | SS | 15-10-11-12 | 21 | 1.3 2.0 | Top 12": Brown, wet, medium dense, silty fine to medium SAND, trace gravel, trace clay, (SM). Bottom 4": Brown, wet, medium dense, fine sandy SILT, trace clay, (ML). | | |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-205 (PL-5)


SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Southwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/1/16
 DATE COMPLETED: 2/1/16

COORDS: N: 260,902.81 E: 357,253.32
 GS ELEVATION: 8.5 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 50 deg F

INCLINATION: 90
 DEPTH W.L.: 7.0 ft
 ELEVATION W.L.: 1.5 ft
 DATE W.L.: 2/1/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|-----------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | SM |  | | S11 | SS | 15-10-11-12 | 21 | $\frac{13}{20}$ | PID = 0.0 ppm |

Boring completed at 51.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 24.5' away from the borehole. No vibrations detected.
3. 4" casing to 24' bgs - open hole below



Fill (made ground)



USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-206 (PL-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/2/16

COORDS: N: 260,990.68 E: 357,174.84
 GS ELEVATION: 9.3 ft
 WEATHER: Clear
 TEMPERATURE: 44 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 7.6 ft
 ELEVATION W.L.: 1.7 ft
 DATE W.L.: 2/2/2016
 TIME W.L.: 1150

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|------------|---|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 19.0ft Brown to black, fine to coarse SAND, some gravel, some to little silt, (FILL). | | | 0.0 | S1 | SS | 8-13-16-21 | 29 | 1.3 2.0 | Dark brown, damp, medium dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.1 ppm |
| 5 | 4.0 | | | | S2 | SS | 19-21-26-24 | 47 | 1.3 2.0 | Brown, damp, dense, fine to coarse SAND, little gravel, little silt, (SM). PID = 0.6 ppm | |
| 10.0 | 9.0 | | | | S3 | SS | 25-29-32-36 | 61 | 1.5 2.0 | Brown to black, wet, very dense, medium to coarse SAND, some gravel, some silt, (SM). Strong hydrocarbon odor and visible sheen @ 10'1" bgs. PID = 11.2 ppm 10.0 ft: Driller notes hydrocarbon odor - PID = 0.3 ppm in work area | |
| 15.0 | 14.0 | | | | S4 | SS | 16-11-16-19 | 27 | 1.4 2.0 | Dark brown to black, wet, fine to coarse SAND, some gravel, some silt, trace organics, (SM). Strong hydrocarbon odor and visible sheen. PID = 2.7 ppm | |
| 20.0 | 19.0 | | | | S5 | SS | 1-1-1-7 | 2 | 0.3 2.0 | Dark brown, wet, very loose, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.5 ppm | |
| 25.0 | | 19.0 - 51.0ft Brown, fine to coarse SAND, some to trace gravel, some to little silt, (Outwash). | SM | | 24.0 | S6 | SS | 25-24-19-14 | 43 | 1.2 2.0 | Light Brown, wet, dense, fine to coarse SAND, little gravel, little silt, (SM). Occasional dark brown layers up to 0.5" thick of silty fine sand. PID = 0.5 ppm |

Log continued on next page

Fill (made ground) USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-206 (PL-6)

SHEET 2 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/2/16

COORDS: N: 260,990.68 E: 357,174.84
 GS ELEVATION: 9.3 ft
 WEATHER: Clear
 TEMPERATURE: 44 deg F

INCLINATION: 90
 DEPTH W.L.: 7.6 ft
 ELEVATION W.L.: 1.7 ft
 DATE W.L.: 2/2/2016
 TIME W.L.: 1150

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|----------------|----|------------|--------------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SM | | S6 | SS | 25-24-19-14 | 43 | 1.2 2.0 | | |
| | | | | | | | | | | | | 26.0 ft: Driller adds drilling mud to the water |
| 29.0 | | | | | | S7 | SS | 16-16-15-10 | 31 | 0.3 2.0 | | Brown, wet, dense, gravelly fine to coarse SAND, little silt, trace clay, (SM). PID = 0.0 ppm |
| 34.0 | | | | | | S8 | SS | 8-6-7-8 | 13 | 1.3 2.0 | | Brown, wet, medium dense, fine to coarse SAND, some silt, trace gravel, trace clay, (SM). |
| 39.0 | | | | | | S9 | SS | 9-11-11-12 | 22 | 1.3 2.0 | | Top 6": Brown to dark brown, wet, medium dense, fine to coarse SAND, some silt, trace gravel, trace clay, (SM). Bottom 8": Brown, wet, medium dense, fine sandy SILT, trace gravel, (ML). |
| 44.0 | | | | | | S10 | SS | 16-34-25-17 | 59 | 0.8 2.0 | | Brown, wet, very dense, gravelly fine to coarse SAND, some silt, trace clay, (SM). 2.5" piece of gravel at 44'5". |
| 49.0 | | | | | | S11 | SS | 10-13-15-13 | 28 | 1.2 2.0 | | Brown, wet, medium dense, fine to coarse SAND, some gravel, little silt, trace clay, (ML). 2" thick layer of fine to medium sand at 49'6" |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-206 (PL-6)


SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/2/16

COORDS: N: 260,990.68 E: 357,174.84
 GS ELEVATION: 9.3 ft
 WEATHER: Clear
 TEMPERATURE: 44 deg F

INCLINATION: 90
 DEPTH W.L.: 7.6 ft
 ELEVATION W.L.: 1.7 ft
 DATE W.L.: 2/2/2016
 TIME W.L.: 1150

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|-------------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | SM |  | | S11 | SS | 10-13-15-13 | 28 | $\frac{1.2}{2.0}$ | |

Boring completed at 51.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 28.5' away from the borehole. No vibrations detected.
3. 4" casing to 24' bgs - open hole below



Fill (made ground)



USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-207 (PL-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Northwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/10/16

COORDS: N: 261,112.89 E: 357,202.91
 GS ELEVATION: 9.9 ft
 WEATHER: Clear
 TEMPERATURE: 45 deg F

SHEET 1 of 4
 INCLINATION: 90
 DEPTH W.L.: 6.8 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/10/2016
 TIME W.L.: 0950

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|--|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | | |
| 0.0 | | 0.0 - 19.0ft Brown, gravelly fine to coarse SAND, little silt, (FILL). | SM | | 0.0 | S1 | SS | 14-16-15-15 | 31 | 1.3 2.0 | Brown, damp, dense, gravelly fine to coarse SAND, some silt, (SM). From 6" - 9" color changes to pale brown. PID = 0.6 ppm | | | |
| | | | | | | | | | | | | | | |
| 5.0 | 5 | | | | | | | 4.0 | S2 | SS | 18-18-14-12 | 32 | 1.2 2.0 | Brown, damp, dense, fine to coarse SAND, little gravel, little silt, (SM). PID = 0.6 ppm |
| | | | | | | | | | | | | | | |
| 10.0 | 0 | | | | | | | 9.0 | S3 | SS | 19-17-26-24 | 43 | 1.7 2.0 | Black, wet, dense, gravelly fine to coarse SAND, little silt, (SM). Strong hydrocarbon odor and visible sheen. PID = 17.1 ppm |
| | | | | | | | | | | | | | | |
| 15.0 | -5 | | | | 14.0 | S4 | SS | 8-2-6-6 | 8 | 0.6 2.0 | Black, wet, loose, gravelly medium to coarse SAND, little silt, (SM). Hydrocarbon odor. PID = 3.1 ppm | | | |
| | | | | | | | | | | | | | | |
| 20.0 | -10 | 19.0 - 34.0ft Dark gray, gravelly fine to coarse SAND, some to little silt, (Outwash). | SM | | 19.0 | S5 | SS | 8-9-10-9 | 19 | 0.4 2.0 | Dark gray to black, wet, medium dense, gravelly fine to coarse SAND, some silt, (SM). Hydrocarbon odor. PID = 2.8 ppm | | | |
| | | | | | | | | | | | | | | |
| 25.0 | -15 | | | | | | | 24.0 | S6 | SS | 7-8-7-9 | 15 | 1.0 2.0 | Dark gray, wet, medium dense, gravelly fine to coarse SAND, trace clay, (SW). Hydrocarbon odor and visible sheen. PID = 11.0 ppm |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)
 USCS Silty Gravel

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-207 (PL-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Northwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/10/16

COORDS: N: 261,112.89 E: 357,202.91
 GS ELEVATION: 9.9 ft
 WEATHER: Clear
 TEMPERATURE: 45 deg F

SHEET 2 of 4
 INCLINATION: 90
 DEPTH W.L.: 6.8 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/10/2016
 TIME W.L.: 0950

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|---------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | | | SM | | | S6 | SS | 7-8-7-9 | 15 | 1.0 2.0 | |
| | | | | | 29.0 | S7 | SS | 18-39-25-13 | 64 | 1.0 2.0 | Gray to dark gray, wet, very dense, gravelly fine to medium SAND, little silt, (SM). Gravels appear weathered and are up to 3" long. Slight hydrocarbon odor and visible sheen. PID = 0.8 ppm |
| 34.0 - 59.0ft | | Grayish brown, fine to coarse sandy GRAVEL, some silt, (Outwash). | GM | | 34.0 | S8 | SS | 17-18-25-28 | 43 | 1.5 2.0 | Grayish brown, wet, dense, fine to coarse sandy GRAVEL, some fine to coarse sand, trace silt, (GP-GM). |
| | | | | | 39.0 | S9 | SS | 15-16-14-23 | 30 | 0.6 2.0 | Grayish brown, wet, dense, fine to coarse sandy GRAVEL, some silt, (GM). PID = 6.0 ppm |
| | | | | | 44.0 | S10 | SS | 23-19-15-18 | 34 | 1.0 2.0 | Grayish brown, wet, dense, fine to coarse sandy GRAVEL, some silt, (GM). Visible sheen. PID = 0.3 ppm (very windy) |
| | | | | | 49.0 | S11 | SS | 15-24-21-17 | 45 | 1.0 2.0 | Grayish brown, wet, dense, fine to coarse sand GRAVEL, some silt, (GM). 1" thick layer of silty fine to coarse silty sand at 49'3". Visible sheen. PID = 2.3 ppm |
| | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)
 USCS Silty Gravel

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-207 (PL-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Northwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/10/16

COORDS: N: 261,112.89 E: 357,202.91
 GS ELEVATION: 9.9 ft
 WEATHER: Clear
 TEMPERATURE: 45 deg F

SHEET 3 of 4
 INCLINATION: 90
 DEPTH W.L.: 6.8 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/10/2016
 TIME W.L.: 0950

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|--|------|--------------------|-----------------|--------|----------------|-------------------|------------|------------|---|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 50.0 | | | | GM | | S11 | SS | 15-24-21-17 | 45 | 1.0 2.0 | | |
| | | | | | 54.0 | | | | | | | NO RECOVERY. Driller noted very gravelly material. |
| 55.0 | -45 | | | | | S12 | SS | 18-24-21-17 | 45 | 0.0 2.0 | | |
| | | 59.0 - 91.0ft Dark gray, fine to coarse SAND, some silt, trace to some gravel, (Outwash). | | SM | 59.0 | S13 | SS | 16-28-20-18 | 48 | 1.4 2.0 | Dark grayish brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). From 59'5" to 59'7" layer of brown silty fine sand. | |
| 60.0 | -50 | | | | | | | | | | | |
| | | | | | 64.0 | S14 | SS | 12-12-16-14 | 28 | 1.5 2.0 | | Gray, wet, very stiff, SILT, some fine sand, (ML). |
| 65.0 | -55 | | | | | | | | | | | |
| | | | | | 69.0 | S15 | SS | 14-17-22-22 | 39 | 1.5 2.0 | | Dark gray, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). |
| 70.0 | -60 | | | | | | | | | | | |
| | | | | 74.0 | S16 | SS | 7-6-9-10 | 15 | 1.0 2.0 | | Top 10": Grayish brown, wet, dense, fine to medium SAND, some silt, trace gravel, (SM). Some gravel top 2". Bottom 2": Grayish brown, wet, dense, fine sandy SILT, (ML). | |
| 75.0 | -65 | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)
 USCS Silty Gravel

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-207 (PL-1)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 91.0 ft
 LOCATION: Northwest Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/2/16
 DATE COMPLETED: 2/10/16

COORDS: N: 261,112.89 E: 357,202.91
 GS ELEVATION: 9.9 ft
 WEATHER: Clear
 TEMPERATURE: 45 deg F

SHEET 4 of 4
 INCLINATION: 90
 DEPTH W.L.: 6.8 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/10/2016
 TIME W.L.: 0950

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|-------------|-------------------|---|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 75.0 | | | | SM | | S16 | SS | 7-6-9-10 | 15 | $\frac{1.0}{2.0}$ | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80.0 | -70 | | | | | | S17 | SS | 27-20-22-21 | 42 | $\frac{1.3}{2.0}$ | Dark Gray, wet, dense, fine to coarse SAND, little gravel, trace silt, (SP-SM). |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 85.0 | -75 | | | | | S18 | SS | 56-65-70-55 | 135 | $\frac{1.8}{2.0}$ | Top 15": Dark gray, wet, very dense, medium to coarse SAND, some silt, little gravel, (SM). Bottom 7": Dark gray, wet, very dense, SILT, some fine to medium sand, trace gravel, (ML). | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 90.0 | -80 | | | | | S19 | SS | 15-17-17-17 | 34 | $\frac{0.9}{2.0}$ | Dark gray, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP). 90.0 ft: Drillers could not advance the 3" casing past 90' bgs. Bottom heaving 10' into casing while tripping the drill rods out. | |

Boring completed at 91.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 38' away from the borehole. No vibrations detected.
3. 4" casing to 50' bgs - 3" casing to 90' bgs

Fill (made ground)
 USCS Silty Sand (SM)
 USCS Silty Gravel

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-208 (PL-2)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: North Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/10/16
 DATE COMPLETED: 2/11/16

COORDS: N: 261,138.04 E: 357,316.47
 GS ELEVATION: 9.6 ft
 WEATHER: Snow Flurries
 TEMPERATURE: 25 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 6.5 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/11/2016
 TIME W.L.: 1015

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 0.0 | | 0.0 - 19.8ft Brown to black, fine to coarse SAND, some gravel, some silt, (FILL). | | SM | 0.0 | S1 | SS | 4-8-10-11 | 18 | 1.2 2.0 | Brown, damp, medium dense, fine to coarse SAND, little silt, trace gravel, (SM). PID = 0.3 ppm |
| 4.0 | | | | | 4.0 | S2 | SS | 14-32-34-34 | 66 | 1.2 2.0 | Brown, damp, very dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.2 ppm |
| 9.0 | | | | | 9.0 | S3 | SS | 16-22-28-31 | 50 | 1.5 2.0 | Black, wet, very dense, fine to medium SAND, some gravel, some silt, (SM). Strong hydrocarbon odor. PID = 40.1 ppm |
| 14.0 | | | | | 14.0 | S4 | SS | 17-14-11-14 | 25 | 1.4 2.0 | Black, wet, medium dense, fine to coarse SAND, some gravel, some silt, (SM). Hydrocarbon odor and visible sheen. PID = 7.8 ppm |
| 19.0 | | | | | 19.0 | S5 | SS | 9-6-9-28 | 15 | 1.1 2.0 | Top 10": Brown, wet, medium dense, fine to coarse sandy GRAVEL, little silt, some oxidation, (GM). Bottom 3": Dark grayish brown, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). PID = 2.3 ppm |
| 24.0 | | 19.8 - 56.0ft Grayish brown, fine to coarse SAND, little to trace gravel, some to trace silt, (Outwash). | | SM | 24.0 | S6 | SS | 5-5-5-6 | 10 | 1.4 2.0 | Grayish brown, wet, medium dense, fine to medium SAND, little silt, trace gravel, (SM). |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-208 (PL-2)

SHEET 2 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: North Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/10/16
 DATE COMPLETED: 2/11/16

COORDS: N: 261,138.04 E: 357,316.47
 GS ELEVATION: 9.6 ft
 WEATHER: Snow Flurries
 TEMPERATURE: 25 deg F

INCLINATION: 90
 DEPTH W.L.: 6.5 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/11/2016
 TIME W.L.: 1015

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|----------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 25.0 | | | | SM | | S6 | SS | 5-5-5-6 | 10 | 1.4 2.0 | |
| 30.0 | -20 | | | | 29.0 | S7 | SS | 4-5-5-6 | 10 | 1.3 2.0 | Grayish brown, wet, loose, silty fine to coarse SAND, trace gravel, (SM). |
| 35.0 | -25 | | | | 34.0 | S8 | SS | 6-5-6-5 | 11 | 1.4 2.0 | Grayish brown, wet, medium dense, fine to medium SAND, little silt, (SM). At 35' bgs the color changes to brown. |
| 40.0 | -30 | | | | 39.0 | S9 | SS | 4-5-7-7 | 12 | 1.3 2.0 | Grayish brown, wet, medium dense, fine to medium SAND, some silt, trace gravel, (SM). |
| 45.0 | -35 | | | | 44.0 | S10 | SS | 4-6-7-10 | 13 | 1.0 2.0 | Grayish brown, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP-SM). |
| 50.0 | -40 | | | | 49.0 | S11 | SS | 6-9-11-12 | 20 | 1.0 2.0 | Brown, wet, medium dense, fine to medium SAND, some silt, (SM). |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOIL/RX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-208 (PL-2)

SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: North Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/10/16
 DATE COMPLETED: 2/11/16

COORDS: N: 261,138.04 E: 357,316.47
 GS ELEVATION: 9.6 ft
 WEATHER: Snow Flurries
 TEMPERATURE: 25 deg F

INCLINATION: 90
 DEPTH W.L.: 6.5 ft
 ELEVATION W.L.: 3.1 ft
 DATE W.L.: 2/11/2016
 TIME W.L.: 1015

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|----------------|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | -45 | | SM | [Symbol] | | S11 | SS | 6-9-11-12 | 20 | 1.0 2.0 | |
| 55.0 | | | | | 54.0 | S12 | SS | 8-10-10-9 | 20 | 1.3 2.0 | Brown, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP-SM). At 54'8" reddish brown oxidation. |

Boring completed at 56.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 28.5' away from the borehole. No vibrations detected.
3. 4" casing to 30' bgs - open hole below

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-209 (PL-3)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: East Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/16/16
 DATE COMPLETED: 2/16/16

COORDS: N: 261,036.03 E: 357,416.79
 GS ELEVATION: 8.8 ft
 WEATHER: Cloudy
 TEMPERATURE: 45 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 6.0 ft
 ELEVATION W.L.: 2.8 ft
 DATE W.L.: 2/16/2016
 TIME W.L.: 1440

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | | |
|--------------|-----------------|---|------|--------------------|---|--------|----------------|-------------------|----|------------|---|---|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | | |
| 0.0 | | 0.0 - 19.0ft Brown to dark gray, fine to coarse SAND, some gravel, little silt, transitioning to silty GRAVEL, some fine to coarse sand, (FILL). | SM | | 0.0 | S1 | SS | 38-34-18-20 | 52 | 1.3 2.0 | Brown, moist, very dense, fine to coarse SAND, little gravel, little silt, (SM). PID = 0.2 ppm | | | |
| 5 | | | | | 4.0 | S2 | SS | 14-16-17-17 | 33 | 1.3 2.0 | Brown, wet, dense, fine to coarse SAND, little gravel, little silt, (SM). PID = 2.8 ppm 5" - 10": fine to medium SAND | | | |
| 10.0 | | | | | 9.0 | S3 | SS | 21-30-31-26 | 61 | 1.5 2.0 | Dark gray, wet, very dense, silty GRAVEL, some fine to coarse sand, (GM). Strong hydrocarbon odor. PID = 13.1 ppm | | | |
| 15.0 | | | | | 14.0 | S4 | SS | 12-10-9-12 | 19 | 1.2 2.0 | Top 10": Dark gray, wet, medium dense, silty GRAVEL, some fine to coarse sand, (GM). Bottom 4": Brown, wet, medium dense, fine to coarse SAND, trace gravel, trace silt, (SP). Strong hydrocarbon odor. PID = 14.0 ppm | | | |
| 20.0 | | | | | 19.0 - 56.0ft Brown, fine to coarse SAND, some to trace gravel, some to trace silt, (Outwash). | SM | | 19.0 | S5 | SS | 9-3-2-6 | 5 | 0.4 2.0 | Dark grayish brown to brown, wet, loose, gravelly fine to coarse SAND, little silt, (SM). PID = 2.8 |
| 25.0 | | | | | | | | 24.0 | S6 | SS | 9-5-4-6 | 9 | 1.0 2.0 | Pale brown, wet, loose, fine to medium SAND, trace gravel, trace silt, (SP). PID = 0.0 ppm |

Log continued on next page

Fill (made ground) USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-209 (PL-3)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: East Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/16/16
 DATE COMPLETED: 2/16/16

COORDS: N: 261,036.03 E: 357,416.79
 GS ELEVATION: 8.8 ft
 WEATHER: Cloudy
 TEMPERATURE: 45 deg F

SHEET 2 of 3
 INCLINATION: 90
 DEPTH W.L.: 6.0 ft
 ELEVATION W.L.: 2.8 ft
 DATE W.L.: 2/16/2016
 TIME W.L.: 1440

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|-------------|------------|--|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SM | | S6 | SS | 9-5-4-6 | 9 | 1.0 2.0 | | |
| | | | | | | | | | | | | |
| | -20 | | | | | 29.0 | S7 | SS | 11-7-14-17 | 21 | 1.2 2.0 | Dark grayish brown, wet, medium dense, gravelly fine to medium SAND, little silt, (SP-SM). At 29'10" the color changes to brown. PID = 0.0 ppm |
| 30.0 | | | | | | | | | | | | 32.0 ft: Driller adds drilling mud to maintain open hole |
| | -25 | | | | | | | | | | | |
| | | | | | | 34.0 | S8 | SS | 9-8-8-10 | 16 | 1.1 2.0 | Brown, wet, medium dense, fine to coarse SAND, little silt, trace gravel, (SM). PID = 0.0 ppm |
| 35.0 | | | | | | | | | | | | |
| | -30 | | | | | | | | | | | |
| | | | | | | 39.0 | S9 | SS | 14-11-13-14 | 24 | 1.0 2.0 | Brown, wet, medium dense, fine to medium SAND, some silt, trace gravel, (SM). PID = 0.0 ppm |
| 40.0 | | | | | | | | | | | | |
| | -35 | | | | | | | | | | | |
| | | | | | 44.0 | S10 | SS | 12-12-14-13 | 26 | 1.1 2.0 | Brown, wet, medium dense, fine to coarse SAND, little gravel, trace silt, (SP-SM). PID = 0.0 ppm | |
| 45.0 | | | | | | | | | | | | |
| | -40 | | | | | | | | | | | |
| | | | | | 49.0 | S11 | SS | 15-15-38-20 | 53 | 0.9 2.0 | Brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.0 ppm | |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-209 (PL-3)

SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 56.0 ft
 LOCATION: East Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/16/16
 DATE COMPLETED: 2/16/16

COORDS: N: 261,036.03 E: 357,416.79
 GS ELEVATION: 8.8 ft
 WEATHER: Cloudy
 TEMPERATURE: 45 deg F

INCLINATION: 90
 DEPTH W.L.: 6.0 ft
 ELEVATION W.L.: 2.8 ft
 DATE W.L.: 2/16/2016
 TIME W.L.: 1440

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|--------------|--------|-------------|----------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | | | | S11 | SS | 15-15-38-20 | 53 | 0.9 2.0 | |
| | -45 | | SM | | | | | | | | |
| 55.0 | | | | | 54.0 | S12 | SS | 29-27-23-21 | 50 | 1.0 2.0 | Brown, wet, very dense, GRAVEL, some fine to coarse sand, trace silt, (GW-GM). PID = 0.0 ppm |

Boring completed at 56.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 28' away from the borehole. No vibrations detected.
3. 4" casing to 30' bgs - open hole below
4. The borehole collapsed to 30' bgs after taking sample S12



Fill (made ground)



USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-210 (PL-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

SHEET 1 of 5
 INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|---|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | | |
| 0.0 | | 0.0 - 19.0ft Brown to black, fine to coarse SAND, some gravel to fine to coarse sandy GRAVEL, some to little silt, (FILL). | SM | | 0.0 | S1 | SS | 2-12-16-15 | 28 | 1.3 2.0 | Brown, damp, medium dense, fine to coarse SAND, some gravel, little silt, (SM). PID = 0.0 ppm | | | |
| 5 | | | | | | | | | | | | | | |
| 5.0 | | | | | | | | 4.0 | S2 | SS | 12-8-9-10 | 17 | 1.2 2.0 | Black, wet, medium dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 6.2 ppm |
| 10 | | | | | | | | | | | | | | |
| 10.0 | | 19.0 - 49.6ft Brown, sandy GRAVEL, some to trace silt, (Outwash). | GM | | 9.0 | S3 | SS | 10-15-17-25 | 32 | 1.3 2.0 | Black, wet, dense, fine to coarse sandy GRAVEL, little silt, (GM). Strong hydrocarbon odor. PID = 31.6 ppm | | | |
| 15 | | | | | | | | | | | | | | |
| 15.0 | | | | | | | | 14.0 | S4 | SS | 18-38-16-17 | 54 | 1.5 2.0 | Dark gray, wet, very dense, fine to coarse sandy GRAVEL, some silt, (GM). Strong hydrocarbon odor. PID = 41.3 ppm |
| 20.0 | | | | | 19.0 | S5 | SS | 7-11-15-16 | 26 | 1.1 2.0 | Dark gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM). Strong hydrocarbon odor. PID = 16.2 ppm | | | |
| 25.0 | | | | | 24.0 | S6 | SS | 10-10-7-8 | 17 | 0.0 2.0 | NO RECOVERY. | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Gravel
 USCS Silt (ML)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-210 (PL-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

SHEET 2 of 5
 INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|---|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | GM | | S6 | SS | 10-10-7-8 | 17 | $\frac{0.0}{2.0}$ | 25.0 ft: Driller notes gravels while washing out the casing | |
| | | | | | 29.0 | S7 | SS | 7-5-10-10 | 15 | $\frac{0.4}{2.0}$ | Grayish brown, wet, medium dense, fine to coarse sandy GRAVEL, some silt, (GM). Strong hydrocarbon odor. PID = 33.3 ppm | |
| | | | | | 34.0 | S8 | SS | 17-19-15-17 | 34 | $\frac{0.7}{2.0}$ | Brown, wet, dense, fine to coarse sandy GRAVEL, some silt, (GM). Strong hydrocarbon odor. PID = 25.8 ppm | |
| | | | | | 39.0 | S9 | SS | 15-15-20-17 | 35 | $\frac{1.4}{2.0}$ | Brown, wet, dense, GRAVEL, some fine to coarse sand, trace silt, (GW-GM). PID = 3.2 ppm | |
| | | | | | 44.0 | S10 | SS | 19-15-17-16 | 32 | $\frac{1.2}{2.0}$ | Brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.2 ppm | |
| | | | | | 49.0 | S11 | SS | 21-13-12-11 | 25 | $\frac{1.0}{2.0}$ | Top 7": Brown, wet, medium dense, fine to coarse sandy GRAVEL, little silt, (GM). Bottom 5": Brown, moist, very stiff, SILT, little fine sand, (ML). PID = 0.3 | |
| 50.0 | | | ML | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Silty Gravel
 USCS Silt (ML)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-210 (PL-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

SHEET 3 of 5
 INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|------------|--|---|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | |
| 50.0 | | 49.6 - 74.0ft Gray, SILT, trace fine sand, trace clay, (Outwash). | ML | | | S11 | SS | 21-13-12-11 | 25 | 1.0 2.0 | ppm | | |
| | -45 | | | | | | | | | | | | |
| 55.0 | | | | | | | | S12 | SS | 13-13-15-13 | 28 | 0.4 2.0 | Gray, wet, very stiff, SILT, trace gravel, trace fine sand, trace clay, (ML). Tv = 300 psf. PID = 0.0 ppm |
| | -50 | | | | | | | | | | | | |
| 60.0 | | | | | | | | S13 | SS | 10-10-10-13 | 20 | 1.3 2.0 | Gray, wet, very stiff, SILT, trace fine sand, (ML). Tv = 500 psf. PID = 0.0 ppm |
| | -55 | | | | | | | | | | | | |
| 65.0 | | | | | | | | S14 | SS | 13-11-13-15 | 24 | 1.1 2.0 | Grayish brown, wet, very stiff, SILT, trace fine sand, trace clay, (ML). Pp = 3,000 psf. PID = 0.0 ppm |
| | -60 | | | | | | | | | | | | |
| 70.0 | | | | | S15 | SS | 8-9-11-9 | 20 | 1.1 2.0 | Gray, wet, very stiff, SILT, some clay, trace fine sand, (CL-ML). Pp = 2,500 psf. PID = 0.0 ppm | | | |
| | -65 | | | | | | | | | | | | |
| 75.0 | | | SM | | 74.0 | S16 | SS | 14-14-13-13 | 27 | 1.3 2.0 | Grayish brown, wet, medium dense, fine sandy SILT, (ML). PID = 0.0 ppm | | |

Log continued on next page

Fill (made ground)
 USCS Silty Gravel
 USCS Silt (ML)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-210 (PL-4)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

SHEET 4 of 5
 INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|-------------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 75.0 | | 74.0 - 101.0ft Gray to grayish brown, silty fine to coarse SAND to fine coarse SAND, little silt, trace to some gravel. (Outwash). | | SM | | S16 | SS | 14-14-13-13 | 27 | $\frac{1.3}{2.0}$ | |
| -70 | | | | | | | | | | | |
| 80.0 | | | | | | S17 | SS | 9-11-11-14 | 22 | $\frac{0.9}{2.0}$ | Brown, wet, medium dense, fine to coarse SAND, little silt, trace gravel, (SM). Gravel lense at 6". PID = 0.0 ppm |
| -75 | | | | | | | | | | | |
| 85.0 | | | | | | S18 | SS | 24-15-13-17 | 28 | $\frac{0.7}{2.0}$ | Grayish brown, wet, medium dense, medium to coarse sandy GRAVEL, little silt, (GM). PID = 0.3 ppm |
| -80 | | | | | | | | | | | |
| 90.0 | | | | | | S19 | SS | 21-11-11-11 | 22 | $\frac{0.5}{2.0}$ | Gray, wet, medium dense, silty fine to coarse SAND, little gravel, (SM). PID = 0.6 ppm |
| -85 | | | | | | | | | | | |
| 95.0 | | | | | | S20 | SS | 19-17-13-10 | 30 | $\frac{0.2}{2.0}$ | Gray, wet, dense, silty fine to coarse SAND, some gravel, (SM). 1" piece of gravel at 1" blocking the split spoon. PID = 1.1 ppm |
| -90 | | | | | | | | | | | |
| 100.0 | | | | | | S21 | SS | 9-7-8-10 | 15 | $\frac{0.8}{2.0}$ | Grayish brown, wet, medium dense, fine to coarse SAND, some gravel, trace silt, (SP-SM). PID = 0.0 ppm |

Log continued on next page

Fill (made ground)
 USCS Silty Gravel
 USCS Silt (ML)
 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-210 (PL-4)


SHEET 5 of 5

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 101.0 ft
 LOCATION: Southeast Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/17/16
 DATE COMPLETED: 2/19/16

COORDS: N: 260,915.04 E: 357,394.32
 GS ELEVATION: 7.9 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 24-48 deg F

INCLINATION: 90
 DEPTH W.L.: 8.8 ft
 ELEVATION W.L.: -0.9 ft
 DATE W.L.: 2/19/2016
 TIME W.L.: 1130

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|-------------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 100.0 | | | SM |  | | S21 | SS | 9-7-8-10 | 15 | $\frac{0.8}{2.0}$ | |

Boring completed at 101.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 42' away from the borehole. No vibrations detected.
3. 4" casing to 40' bgs - 3" casing to 95' bgs - open hole below

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDBER NH 2011.GDT 5/10/16

 Fill (made ground)
  USCS Silty Gravel
  USCS Silt (ML)
  USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-211 (CHI-6)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Next to Cement Plant

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/24/16
 DATE COMPLETED: 2/24/16

COORDS: N: 260,581.01 E: 357,470.96
 GS ELEVATION: 12.9 ft
 WEATHER: Rain
 TEMPERATURE: 46 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 11.1 ft
 ELEVATION W.L.: 1.8 ft
 DATE W.L.: 2/24/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | | |
|--------------|-----------------|---|------|--------------------|-----------------|--------|----------------|-------------------|----|------------|--|------------|---|---------------------------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | | |
| 0.0 | | 0.0 - 19.0ft Grayish brown to brown, fine to coarse SAND, some to trace gravel, some to little silt, (FILL). | SM | | 0.0 | S1 | SS | 6-10-11-6 | 21 | 0.7 2.0 | Grayish brown, moist to wet, medium dense, fine to coarse SAND, little gravel, some silt, (SM). PID = 0.7 ppm | | | |
| 10 | | | | | | | | | | | | | | |
| 5.0 | | | | | | | 4.0 | S2 | SS | 6-7-2-1 | 9 | 0.5 2.0 | Grayish brown, wet to saturated, loose, fine to coarse sandy GRAVEL, little silt, trace brick fragments, (GM). PID = 0.0 ppm 5.0 ft: Some difficulty advancing casing to 5' bgs | |
| 5 | | | | | | | | | | | | | | |
| 10.0 | | | | | | | 9.0 | S3 | SS | 50/5" | R | 0.4 2.0 | Brown and dark gray with trace oxidized spotting, saturated from 0" - 4.5", dry from 4.5" - 5", very dense, silty fine to coarse SAND, trace gravel, (SM). From 3.5" - 4.5": wood. From 4.5" - 5": concrete. PID = 0.0 ppm 9.4-11.0 ft: Concrete | |
| 0 | | | | | | | | | | | | | | 12.0 ft: Drill rig chatter to 14' bgs |
| 15.0 | | 19.0 - 51.0ft Brown to gray, fine to coarse SAND, some to trace silt, trace gravel, (Outwash). | SM | | 14.0 | S4 | SS | 12-11-19-30 | 30 | 1.1 2.0 | Top 5.5": Grayish brown, wet, medium dense, fine to coarse SAND, little silt, (SP). Most likely wash. Bottom 7.5": Reddish brown, wet, medium dense, fine to coarse SAND, some gravel, (SP). From 5.5" - 8": weathered/fractured gravel. PID = 17.3 ppm (rig exhaust) | | | |
| 20.0 | | | | | | | | | | | | | | |
| 19.0 | | | | | | | 19.0 | S5 | SS | 9-10-11-11 | 21 | 1.5 2.0 | Brown, wet to saturated, medium dense, fine to coarse SAND, (SP). PID = 0.0 ppm | |
| -10 | | | | | | | | | | | | | | |
| 25.0 | | | | | 24.0 | S6 | SS | 22-20-21-20 | 41 | 0.8 2.0 | Brown, wet, dense, fine to coarse SAND, some gravel, some silt, trace clay, (SM). Some of the gravel is greenish-yellow in color. Some clayey till-like bonding around the gravel. PID = 0.0 ppm | | | |

Fill (made ground) USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CJS
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

Log continued on next page

RECORD OF BOREHOLE B-211 (CHI-6)

SHEET 2 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Next to Cement Plant

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/24/16
 DATE COMPLETED: 2/24/16

COORDS: N: 260,581.01 E: 357,470.96
 GS ELEVATION: 12.9 ft
 WEATHER: Rain
 TEMPERATURE: 46 deg F

INCLINATION: 90
 DEPTH W.L.: 11.1 ft
 ELEVATION W.L.: 1.8 ft
 DATE W.L.: 2/24/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|------------|------------|---|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SM | | S6 | SS | 22-20-21-20 | 41 | 0.8 2.0 | | |
| | | | | | | | | | | | | |
| | -15 | | | | | | | | | | | |
| 29.0 | | | | | | S7 | SS | 16-20-24-20 | 44 | 0.8 2.0 | | Brown, wet to saturated, dense, fine to coarse SAND, trace gravel, little silt, trace clay, (SM). Some clayey till-like bonding around gravel with some orange and red oxidation coloring in this bond zone. PID = 0.0 ppm |
| 30.0 | | | | | | | | | | | | |
| | -20 | | | | | | | | | | | |
| 34.0 | | | | | | S8 | SS | 11-11-16-18 | 27 | 1.6 2.0 | | Brown, wet to saturated, medium dense, fine to coarse SAND, grading to fine sand at 11", (SP). PID = 0.0 ppm |
| 35.0 | | | | | | | | | | | | |
| | -25 | | | | | | | | | | | |
| 39.0 | | | | | | S9 | SS | 15-20-23-28 | 43 | 1.7 2.0 | | Gray, wet, dense, fine to medium sandy SILT, (ML). Medium sand is in brown bands. At 5.5" and 17.5": oxidized bands. PID = 0.0 ppm |
| 40.0 | | | | | | | | | | | | |
| | -30 | | | | | | | | | | | |
| 44.0 | | | | | S10 | SS | 18-30-35-37 | 65 | 1.0 2.0 | | Gray, wet, dense, fine to medium sandy SILT, (ML). Oxidized banding throughout. PID = 0.0 ppm | |
| 45.0 | | | | | | | | | | | | |
| | -35 | | | | | | | | | | | |
| 49.0 | | | | | S11 | SS | 28-31-32-35 | 63 | 2.0 2.0 | | Brown, wet, very dense, fine to medium SAND, little silt, trace gravel, (SM). PID = 0.0 ppm | |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)

 USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CJS
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-211 (CHI-6)


SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 51.0 ft
 LOCATION: Next to Cement Plant

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/24/16
 DATE COMPLETED: 2/24/16

COORDS: N: 260,581.01 E: 357,470.96
 GS ELEVATION: 12.9 ft
 WEATHER: Rain
 TEMPERATURE: 46 deg F

INCLINATION: 90
 DEPTH W.L.: 11.1 ft
 ELEVATION W.L.: 1.8 ft
 DATE W.L.: 2/24/2016
 TIME W.L.: 1300

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|---|--------------------|--------|----------------|-------------------|----|-------------------|--------------------|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | SM |  | | S11 | SS | 28-31-32-35 | 63 | <u>2.0</u> 2.0 | |

Boring completed at 51.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. 4" casing to 9' bgs - 3" casing to 24' bgs - open hole below

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

 Fill (made ground)
  USCS Silty Sand (SM)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CJS
 CHECKED BY: JDL
 DATE: 3/3/16



RECORD OF BOREHOLE B-212 (CHI-2)

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/19/16
 DATE COMPLETED: 2/23/16

COORDS: N: 260,942.62 E: 357,201.33
 GS ELEVATION: 9.1 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 37-40 deg F

SHEET 1 of 3
 INCLINATION: 90
 DEPTH W.L.: 6.9 ft
 ELEVATION W.L.: 2.2 ft
 DATE W.L.: 2/23/2016
 TIME W.L.: 0945

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | | | |
|--------------|-----------------|--|------|--------------------|---|--------|----------------|-------------------|----|------------|---|----|------------|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | | | |
| 0.0 | | 0.0 - 19.0ft Brown to dark gray, fine to coarse SAND, some to trace gravel, some to trace silt, (FILL). | SM | | 0.0 | S1 | SS | 3-6-8-15 | 14 | 1.3 2.0 | Brown, damp, medium dense, fine to coarse SAND, little silt, trace gravel, (SW-SM). PID = 0.2 ppm | | | |
| 5 | | | | | 4.0 | S2 | SS | 12-13-14-13 | 27 | 1.2 2.0 | Top 6": Brown, wet, medium dense, fine to coarse SAND, trace gravel, trace silt, (SW-SM). Bottom 8": Pale brown, damp, medium dense, fine to medium SAND, trace silt (SP). PID = 7.3 ppm | | | |
| 10.0 | | | | | 9.0 | S3 | SS | 29-42-45-29 | 87 | 1.5 2.0 | Dark, wet, very dense, silty fine to coarse SAND, some gravel, trace organics (SM). Strong hydrocarbon odor and visible sheen. At 10": Brick. PID = 42.1 ppm | | | |
| 15.0 | | | | | 14.0 | S4 | SS | 9-11-11-17 | 22 | 1.0 2.0 | Dark gray, wet, medium dense, gravelly fine to coarse SAND, some silt, (SM). Strong hydrocarbon odor and visible sheen. PID = 30.2 ppm | | | |
| 20.0 | | | | | 19.0 - 61.0ft Brown, fine to coarse SAND, some to trace gravel, little to trace silt, (Outwash). | SP | | 19.0 | S5 | SS | 11-12-18-22 | 30 | 1.1 2.0 | Grayish brown, wet, dense, fine to coarse SAND, little gravel, trace silt, (SP). PID = 3.5 ppm |
| 25.0 | | | | | | | | 24.0 | S6 | SS | 20-23-26-28 | 49 | 1.4 2.0 | Brown, wet, dense, fine to coarse SAND, little gravel, trace silt, (SP). At 14": 1" thick layer of fine sandy silt. PID = 1.9 ppm |

Log continued on next page

Fill (made ground) USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-212 (CHI-2)

SHEET 2 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/19/16
 DATE COMPLETED: 2/23/16

COORDS: N: 260,942.62 E: 357,201.33
 GS ELEVATION: 9.1 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 37-40 deg F

INCLINATION: 90
 DEPTH W.L.: 6.9 ft
 ELEVATION W.L.: 2.2 ft
 DATE W.L.: 2/23/2016
 TIME W.L.: 0945

| SOIL PROFILE | | | | SAMPLE INFORMATION | | | | | | | | |
|--------------|-----------------|-----------------------|------|--------------------|-----------------|--------|----------------|-------------------|-------------|------------|---|---|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description | |
| 25.0 | | | | SP | | S6 | SS | 20-23-26-28 | 49 | 1.4 2.0 | | |
| | | | | | | | | | | | | |
| | -20 | | | | | 29.0 | S7 | SS | 23-33-36-38 | 69 | 1.7 2.0 | Brown, wet, very dense, fine to coarse SAND, little gravel, trace silt, (SP). PID = 3.0 ppm |
| 30.0 | | | | | | | | | | | | |
| | -25 | | | | | 34.0 | S8 | SS | 9-8-10-18 | 18 | 1.3 2.0 | Brown, wet, medium dense, fine to medium SAND, little gravel, trace silt, (SP). From 1" - 2" and 12" - 15": gravel lens. From 9" - 11": oxidation of sand. PID = 2.3 ppm |
| 35.0 | | | | | | | | | | | | |
| | -30 | | | | | 39.0 | S9 | SS | 15-20-12-10 | 32 | 0.8 2.0 | Top 6": Brown, wet, dense, medium to coarse SAND, some gravel, trace silt, (SP). Bottom 4": Brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). PID = 0.7 ppm. |
| 40.0 | | | | | | | | | | | | |
| | -35 | | | | | 44.0 | S10 | SS | 17-11-11-14 | 22 | 1.3 2.0 | Brown, wet, medium dense, silty fine SAND, trace gravel, (SM). From 0" - 3": fine to coarse sand. PID = 0.0 ppm |
| 45.0 | | | | | | | | | | | | 46.0 ft: Driller's Note: Sand coming into the casing at ~46' bgs. |
| | -40 | | | | 49.0 | S11 | SS | 18-15-18-16 | 33 | 1.3 2.0 | Brown, wet, dense, fine to coarse sandy GRAVEL, little silt, (GM). PID = 0.0 ppm. | |
| 50.0 | | | | | | | | | | | | |

Log continued on next page

Fill (made ground)
 USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16



003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDR NH 2011.GDT 5/10/16

RECORD OF BOREHOLE B-212 (CHI-2)

SHEET 3 of 3

PROJECT: CHI LNG Bund Highwall
 PROJECT NUMBER: 154-6055
 DRILLED DEPTH: 61.0 ft
 LOCATION: West Tank Area

DRILL METHOD: 4 inch Drive and Wash
 HAMMER TYPE: Auto
 DATE STARTED: 2/19/16
 DATE COMPLETED: 2/23/16

COORDS: N: 260,942.62 E: 357,201.33
 GS ELEVATION: 9.1 ft
 WEATHER: Partly Cloudy
 TEMPERATURE: 37-40 deg F

INCLINATION: 90
 DEPTH W.L.: 6.9 ft
 ELEVATION W.L.: 2.2 ft
 DATE W.L.: 2/23/2016
 TIME W.L.: 0945

| SOIL PROFILE | | | | | SAMPLE INFORMATION | | | | | | |
|--------------|-----------------|-----------------------|------|------------------|--------------------|--------|-------------|----------------|----|------------|--|
| DEPTH ft | ELEVATION ft | LITHOLOGY DESCRIPTION | USCS | GRAPHIC LOG | SAMPLE DEPTH | NUMBER | SAMPLE TYPE | BLOWS per 6 in | N | REC ATT | Sample Description |
| 50.0 | | | | [Dotted Pattern] | | S11 | SS | 18-15-18-16 | 33 | 1.3 2.0 | |
| -45 | | | | | 54.0 | S12 | SS | 29-26-24-18 | 50 | 2.0 2.0 | Top 20": Brown, wet, very dense, fine to coarse SAND, some gravel, little silt, (SM). Bottom 4": Brown, wet, hard, SILT, trace gravel, trace fine to coarse sand, (ML). Oxidation of the gravel. PID = 0.0 ppm. |
| 55.0 | | | SP | | | | | | | | |
| -50 | | | | | 59.0 | S13 | SS | 15-23-16-20 | 39 | 1.3 2.0 | Brown, wet, dense, fine to coarse SAND, some gravel, little silt, (SP-SM). At 12": large gravel clasts. PID = 0.0 ppm. |
| 60.0 | | | | | | | | | | | |

Boring completed at 61.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.
2. Seismograph geophone was anchored to the LNG Tank foundation 22.5' away from the borehole. No vibrations detected.
3. 4" casing to 30' bgs - 3" casing to 55' bgs - open hole below

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL.GPJ GOLDRER NH 2011.GDT 5/10/16

Fill (made ground)
 USCS Poorly-graded Sand (SP)

D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings PP: Pocket Penetrometer TV: Torvane

DRILLING COMPANY: Geologic Earth Exploration Inc.
 DRILLER: C. O'Donnel
 DRILL RIG: CME - 45

LOGGED BY: CEM
 CHECKED BY: JDL
 DATE: 3/3/16





BORING LOG

BORING NO.: **B-1**
 SHEET: 1 OF 3
 PROJECT NO.: 15-0044
 DATE START: 2/24/2015
 DATE FINISH: 2/26/2015
 ELEVATION: N/A
 SWC REP.: C. CLARK

PROJECT / CLIENT: ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC
 LOCATION: 642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND
 DRILLING FIRM: CRAWFORD DRILLING SERVICES, LLC DRILLER: DARREL GREEN

| | TYPE | SIZE I.D. | HAMMER WT. | HAMMER FALL |
|--------------|------|-----------|------------|-------------|
| CASING: | HW | 4" | 140 lbs. | 30" |
| SAMPLER: | SS | 1-3/8" | 140 lbs. | 30" |
| CORE BARREL: | - | - | - | - |

WATER LEVEL INFORMATION
 GROUNDWATER MEASURED AT
 6.0 FT BELOW GROUND SURFACE

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) |
|-----------------------|--------|------|------|-------------|----------------------|------|-------|-------|-------|--|-------------------|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | |
| | 1D | 24" | 20" | 2.0' | 16 | 23 | 38 | 67 | 6.0' | DARK BROWN GRAVELLY SILTY SAND WITH SOME ASH FRAGEMENTS (FILL) (FROST OBSERVED TO 1.5 FEET) ~MEDIUM DENSE~ | 0.5 |
| | 2D | 24" | 6" | 6.0' | 10 | 9 | 8 | 6 | | | |
| | 3D | 24" | 8" | 8.0' | 9 | 6 | 4 | 4 | 13.0' | BROWN SILTY GRAVELLY SAND ~MEDIUM DENSE TO LOOSE~ w = 13.8% | ND |
| | 4D | 24" | 0" | 11.0' | 5 | 3 | 1 | WOH | | | |
| | 5D | 24" | 0" | 13.0' | 5 | 3 | 2 | 1 | | | |
| | 6D | 24" | 2" | 15.0' | 1 | 1 | WOH | WOH | 17.0' | DARK GRAY FINE SAND AND SILT WITH TRACE GRAVEL ~LOOSE~ | ND |
| | 7D | 24" | 0" | 17.0' | 1 | 1 | 3 | 4 | | | |
| | 8D | 24" | 12" | 19.0' | 6 | 3 | 6 | 4 | 21.0' | BLACK GRAVELLY SILTY ORGANIC SILT AND SOME SHELLS ~LOOSE~ w = 24.8% | ND |
| | 9D | 24" | 6" | 21.0' | 8 | 4 | 3 | 3 | | | |
| | 10D | 24" | 10" | 23.0' | 7 | 5 | 11 | 13 | | | |
| | 11D | 24" | 12" | 26.0' | 13 | 17 | 17 | 17 | 29.0' | BLACK SILTY GRAVELLY SAND WITH SLIGHT PETROLEUM ODOR ~DENSE~ | 2.0 |
| | 12D | 24" | 12" | 31.0' | 17 | 16 | 17 | 14 | | | |
| | 13D | 24" | 8" | 36.0' | 32 | 29 | 23 | 19 | 34.0' | BLACK GRAVELLY SILTY SAND WITH SLIGHT PETROLEUM ODOR ~DENSE~ | 2.0 |
| | | | | | | | | | | | |
| | | | | | | | | | | DARK GRAY SILTY GRAVEL AND SAND ~VERY DENSE~ w = 8.1% | ND |

SAMPLES: SOIL CLASSIFIED BY:
 D = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

| | |
|-------------------------------------|-----------------------|
| <input type="checkbox"/> | DRILLER - VISUALLY |
| <input checked="" type="checkbox"/> | SOIL TECH. - VISUALLY |
| <input checked="" type="checkbox"/> | LABORATORY TEST |

REMARKS: ppm= Parts per million, ND = Non-Detect, PID calibrated to 100 ppm isobutylene
 PID results have been corrected to MDEP set point.
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**





BORING LOG

BORING NO.: **B-1**
 SHEET: **2 OF 3**
 PROJECT NO.: **15-0044**
 DATE START: **2/24/2015**
 DATE FINISH: **2/26/2015**
 ELEVATION: **N/A**
 SWC REP.: **C. CLARK**

PROJECT / CLIENT: **ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC**
 LOCATION: **642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND**
 DRILLING FIRM: **CRAWFORD DRILLING SERVICES, LLC** DRILLER: **DARREL GREEN**

| | TYPE | SIZE I.D. | HAMMER WT. | HAMMER FALL |
|--------------|------|-----------|------------|-------------|
| CASING: | HW | 4" | 140 lbs. | 30" |
| SAMPLER: | SS | 1-3/8" | 140 lbs. | 30" |
| CORE BARREL: | - | - | - | - |

WATER LEVEL INFORMATION
 GROUNDWATER MEASURED AT
6.0 FT BELOW GROUND SURFACE

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--------|------|------|-------------|----------------------|------|-------|-------|-------|--|-------------------|--|-----|-----|-----|-------|----|----|----|----|-------|--|----|--|--|--|--|--|--|--|--|--|--|-----|-----|-----|-------|----|----|----|----|-------|--|----|--|--|--|--|--|--|--|--|--|--|-----|-----|----|-------|----|----|----|----|-------|--|----|--|--|--|--|--|--|--|--|--|--|-----|-----|----|-------|----|----|----|----|-------|--|----|--|--|--|--|--|--|--|--|--|--|-----|-----|----|-------|----|----|----|----|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 14D | 24" | 4" | 41.0' | 10 | 17 | 14 | 17 | 46.0' | DARK GRAY SILTY SAND AND GRAVEL ~DENSE TO MEDIUM DENSE~ | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 15D | 24" | 10" | 46.0' | 14 | 13 | 13 | 15 | 59.0' | BROWN / GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE TO VERY DENSE~ w = 9.9% | ND | | | | | | | | | | | 16D | 24" | 12" | 51.0' | 26 | 23 | 26 | 22 | 59.0' | GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 17D | 24" | 0" | 56.0' | 44 | 34 | 26 | 20 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 |
| | 15D | 24" | 10" | 46.0' | 14 | 13 | 13 | 15 | 59.0' | BROWN / GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE TO VERY DENSE~ w = 9.9% | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 16D | 24" | 12" | 51.0' | 26 | 23 | 26 | 22 | 59.0' | GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 17D | 24" | 0" | 56.0' | 44 | 34 | 26 | 20 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | |
| | 16D | 24" | 12" | 51.0' | 26 | 23 | 26 | 22 | 59.0' | GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 17D | 24" | 0" | 56.0' | 44 | 34 | 26 | 20 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 17D | 24" | 0" | 56.0' | 44 | 34 | 26 | 20 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 18D | 24" | 8" | 61.0' | 13 | 18 | 14 | 11 | 69.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) ~DENSE~ | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 19D | 24" | 6" | 71.0' | 13 | 12 | 19 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

SAMPLES: SOIL CLASSIFIED BY:
 D = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

| | |
|-------------------------------------|-----------------------|
| <input type="checkbox"/> | DRILLER - VISUALLY |
| <input checked="" type="checkbox"/> | SOIL TECH. - VISUALLY |
| <input checked="" type="checkbox"/> | LABORATORY TEST |

REMARKS: ppm= Parts per million, ND = Non-Detect, PID calibrated to 100 ppm isobutylene
 PID results have been corrected to MDEP set point.
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**



BORING LOG

BORING NO.: **B-1**
 SHEET: 3 OF 3
 PROJECT NO.: 15-0044
 DATE START: 2/24/2015
 DATE FINISH: 2/26/2015
 ELEVATION: N/A
 SWC REP.: C. CLARK

PROJECT / CLIENT: ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC
 LOCATION: 642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND
 DRILLING FIRM: CRAWFORD DRILLING SERVICES, LLC DRILLER: DARREL GREEN

| | TYPE | SIZE I.D. | HAMMER WT. | HAMMER FALL |
|--------------|------|-----------|------------|-------------|
| CASING: | HW | 4" | 140 lbs. | 30" |
| SAMPLER: | SS | 1-3/8" | 140 lbs. | 30" |
| CORE BARREL: | - | - | - | - |

WATER LEVEL INFORMATION
 GROUNDWATER MEASURED AT
 6.0 FT BELOW GROUND SURFACE

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) |
|-----------------------|--------|------|------|-------------|----------------------|------|-------|-------|--------|---|-------------------|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | |
| | 20D | 24" | 6" | 81.0' | 82 | 96 | 32 | 13 | 89.0' | GRAY SILTY SAND AND GRAVEL (GLACIAL TILL) BOULDER ENCOUNTERED FROM 85.5 TO 86.5 FEET ~VERY DENSE~ | ND |
| | 21D | 24" | 4" | 91.0' | 24 | 26 | 30 | 36 | | GRAY SILTY GRAVELLY SAND (GLACIAL TILL) ~VERY DENSE~ | ND |
| | 22D | 24" | 8" | 101.0' | 25 | 22 | 28 | 30 | 101.0' | BOTTOM OF TEST BORING AT APPROXIMATELY 101.0 FEET | ND |

SAMPLES: SOIL CLASSIFIED BY:
 D = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

| | |
|-------------------------------------|-----------------------|
| <input type="checkbox"/> | DRILLER - VISUALLY |
| <input checked="" type="checkbox"/> | SOIL TECH. - VISUALLY |
| <input checked="" type="checkbox"/> | LABORATORY TEST |

REMARKS: ppm= Parts per million, ND = Non-Detect, PID calibrated to 100 ppm isobutylene
 PID results have been corrected to MDEP set point.
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**



BORING LOG

BORING NO.: **B-2**
 SHEET: 1 OF 2
 PROJECT NO.: 15-0044
 DATE START: 6/5/2015
 DATE FINISH: 6/5/2015
 ELEVATION: N/A
 SWC REP.: E.BARON

PROJECT / CLIENT: ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC
 LOCATION: 642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND
 DRILLING FIRM: CRAWFORD DRILLING SERVICES, LLC DRILLER: DARREL GREEN

| | TYPE | SIZE I.D. | HAMMER WT. | HAMMER FALL |
|--------------|------|-----------|------------|-------------|
| CASING: | HW | 4" | 140 lbs. | 30" |
| SAMPLER: | SS | 1-3/8" | 140 lbs. | 30" |
| CORE BARREL: | - | - | - | - |

WATER LEVEL INFORMATION
 6.0' based on soil saturation

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) |
|-----------------------|--------|------|------|-------------|----------------------|------|--------|-------|-------|---|-------------------|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | |
| | 1D | 24" | 19" | 2.0' | 4 | 7 | 12 | 30 | 2.0' | DK BROWN, SILTY F-M SAND WITH BRICK ~MEDIUM DENSE~ | 0.3 12.3 |
| | 2D | 19" | 19" | 3.6' | 24 | 50 | 50/0.1 | | 4.0' | LT BROWN, SILTY F-M SAND, SOME GRAVEL | 0.3 |
| | 3D | 24" | 13" | 6.0' | 27 | 23 | 20 | 11 | 7.0' | GRAY, SILTY GRAVELLY F-C SAND, POCKETS OF BLACK MATERIAL WITH HEAVY PETROLEUM ODOR ~MEDIUM DENSE TO DENSE~ | 63 |
| | 4D | 24" | 11" | 8.0' | 13 | 15 | 12 | 11 | | | 89 |
| | 5D | 24" | 9" | 11.0' | 9 | 9 | 10 | 21 | 9.0' | GRAY, SILTY F-C SAND, SOME GRAVEL, MODERATE PETROLEUM ODOR ~MEDIUM DENSE~ | 124 |
| | 6D | 24" | 6" | 13.0' | 7 | 12 | 10 | 9 | 14.0' | GRAY, FINE SAND AND SILT, MODERATE PETROLEUM ODOR ~MEDIUM DENSE~ | 169 |
| | 7D | 24" | 24" | 16.0' | 6 | 7 | 9 | 10 | | | 212 |
| | 8D | 24" | 24" | 18.0' | 6 | 9 | 11 | 10 | 19.9' | BROWN, FINE SANDY SILT, SLIGHT PETROLEUM ODOR ~MEDIUM DENSE~ | 117 |
| | 9D | 24" | 14" | 21.0' | 8 | 9 | 12 | 18 | | | 88 |
| | 10D | 24" | 11" | 23.0' | 8 | 10 | 12 | 10 | 29.0' | BLACK-GRAY, F-C SAND AND GRAVEL, SLIGHT PETROLEUM ODOR ~MEDIUM DENSE~ | 32 |
| | 11D | 24" | 0" | 26.0' | 18 | 17 | 11 | 13 | | | |
| | 12D | 24" | 0" | 31.0' | 34 | 30 | 27 | 22 | 34.0' | DK GRAY, SILTY F-C SAND, SOME GRAVEL, SLIGHT PETROLEUM ODOR ~DENSE TO VERY DENSE~ | 27 |
| | 13D | 24" | 3" | 33.0' | 23 | 21 | 20 | 24 | | | 69 |
| | 14D | 24" | 15" | 36.0' | 8 | 8 | 14 | 13 | | GRAY-BLACK, SILTY F-M SAND, HEAVY PETROLEUM ODOR ~MEDIUM DENSE~ | 89 |
| | 15D | 24" | 14" | 41.0' | 7 | 8 | 10 | 11 | | | |

SAMPLES: SOIL CLASSIFIED BY:
 D = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

| | |
|---|-----------------------|
| | DRILLER - VISUALLY |
| X | SOIL TECH. - VISUALLY |
| | LABORATORY TEST |

REMARKS: ppm= Parts per million, ND = Non-Detect
 PID calibrated to 100 ppm isobutylene
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.



BORING LOG

BORING NO.: **B-2**
 SHEET: **2 OF 2**
 PROJECT NO.: **15-0044**
 DATE START: **6/5/2015**
 DATE FINISH: **6/5/2015**
 ELEVATION: **N/A**
 SWC REP.: **E.BARON**
 WATER LEVEL INFORMATION
6.0' based on soil saturation

PROJECT / CLIENT: **ALLENS AVENUE REGULATOR STATION REBUILD / PROCESS PIPELINE SERVICES, INC**
 LOCATION: **642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND**
 DRILLING FIRM: **CRAWFORD DRILLING SERVICES, LLC** DRILLER: **DARREL GREEN**
 TYPE: **HW** SIZE I.D.: **4"** HAMMER WT.: **140 lbs.** HAMMER FALL: **30"**
 SAMPLER: **SS** SIZE I.D.: **1-3/8"** HAMMER WT.: **140 lbs.** HAMMER FALL: **30"**
 CORE BARREL: **-**

| CASING BLOWS PER FOOT | SAMPLE | | | | SAMPLER BLOWS PER 6" | | | | DEPTH | STRATA & TEST DATA | PID Results (ppm) |
|-----------------------|--------|------|------|-------------|----------------------|------|-------|-------|-------|---|-------------------|
| | NO. | PEN. | REC. | DEPTH @ BOT | 0-6 | 6-12 | 12-18 | 18-24 | | | |
| | | | | | | | | | | GRAY-BLACK, SILTY F-M SAND, HEAVY PETROLEUM ODOR | 53 |
| | | | | | | | | 44.0' | | | |
| | 16D | 24" | 13" | 46.0' | 7 | 13 | 13 | 14 | 46.0' | BROWN-BLACK, SILTY F-M SAND, SOME GRAVEL, HEAVY PETROLEUM ODOR ~MEDIUM DENSE~ | 53 |
| | | | | | | | | | | BOTTOM OF TEST BORING AT APPROXIMATELY 46.0 FEET | |

SAMPLES: D = SPLIT SPOON
 C = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY: DRILLER - VISUALLY
 SOIL TECH. - VISUALLY
 LABORATORY TEST

REMARKS: ppm= Parts per million, ND = Non-Detect
 PID calibrated to 100 ppm isobutylene
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

5
 BORING NO.: **B-2**

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
Allens Ave. Regulator Rebuild-Geo Suppor
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-1
SHEET: 1 of 2
PROJECT NO: 33554.80
REVIEWED BY: J. Marsland

Logged By: R. Ryan
Drilling Co.: Geologic
Foreman: D, Jacobs

Type of Rig: ATV
Rig Model: Tack 45
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11
Final Boring Depth (ft.): 40
Date Start - Finish: 4/26/2016 - 4/27/2016

H. Datum:
V. Datum:
NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5"

Sampler Type: SS
Sampler O.D. (in.): 2.5
Sampler Length (in.): 24
Rock Core Size:

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|-----------|------|-------------|------------|
| 4/27/2016 | | 6 | 0 Hr |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | Blows (per 6 in.) | SPT Value | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------|-------------|-----------|-----------|----------------|-------------------|---|--|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| 5 | | S-1 | 5-7 | 18 | 24 | 2 1 1 4 | 2 | S-1 : Top 4": Very soft, gray/brown, CLAY and SILT Bottom 6": Medium dense, olive/gray, fine SAND and SILT, slight odor (very moist) | 1 | | 0.3 | FILL | 10.7 | |
| | | S-2 | 8-10 | 18 | 24 | WOH 3 3 10 | 6 | S-2 : Top 6": Loose, olive/gray, fine to coarse SAND, some Silt (moist) Bottom 12": Loose, gray, fine to medium SAND, some Silt, trace Gravel (moist) | | | 9 | | 2.0 | |
| 10 | | S-3 | 10-12 | 24 | 16 | 8 9 10 12 | 19 | S-3 : Top 11": Medium dense, gray SILT, some fine Sand, no odor (Wet) Bottom 5": Medium dense, gray, fine to coarse SAND, some Silt, trace Gravel, no odor (Wet) | | | | | | |
| 15 | | S-4 | 16-18 | 24 | 15 | 8 10 11 14 | 21 | S-4 : Medium dense, gray SILT, some fine Sand (wet) | | | | | | |
| 20 | | S-5 | 20-22 | 24 | 6 | 8 6 6 5 | 12 | S-5 : Top: Medium dense, gray, fine to coarse SAND, some Gravel, some Silt (Wet) Bottom: Medium dense, fine to coarse SAND and GRAVEL, little Silt, stratified. | | | | | | |
| 25 | | S-6 | 25-27 | 24 | 10 | 12 11 13 15 | 24 | S-6 : Medium dense, gray/dark gray, stratified fine to coarse SAND and GRAVEL, little Silt (wet), moderate odor | | | | | | |
| 30 | | | | | | | | | | | | | | |

REMARKS
1 - Vacuum excavate to 5' below grade before sampling. Top 5' consists of fine to medium sand and gravel (fill).

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-1

GZA TEMPLATE TEST BORING; 5/13/2016; 3:36:10 PM

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
Allens Ave. Regulator Rebuild-Geo Suppor
642 Allens Avenue
Providence, Rhode Island

EXPLORATION NO.: GZ-1
SHEET: 2 of 2
PROJECT NO: 33554.80
REVIEWED BY: J. Marsland

Logged By: R. Ryan
Drilling Co.: Geologic
Foreman: D, Jacobs

Type of Rig: ATV
Rig Model: Tack 45
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 11
Final Boring Depth (ft.): 40
Date Start - Finish: 4/26/2016 - 4/27/2016

H. Datum:
V. Datum:
NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5"

Sampler Type: SS
Sampler O.D. (in.): 2.5
Sampler Length (in.): 24
Rock Core Size:

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|-----------|------|-------------|------------|
| 4/27/2016 | | 6 | 0 Hr |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | SPT Value | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------------------------------|-------------|-----------|-----------|-------------------|-----------|---|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | S-7 | 30-32 | 24 | 14 | 26 28 29 30 | 57 | S-7 : Very dense, tan/brown, fine to coarse SAND and GRAVEL, some Silt, moderate odor | | | | | |
| 35 | | S-8 | 35-37 | 24 | 0 | 17 21 12 12 | 33 | S-8 : NO RECOVERY (wash consists of coarse sand and gravel) | | | | OUTWASH | |
| 40 | | S-9 | 38-40 | 24 | 12 | 10 6 8 12 | 14 | S-9 : Medium dense, gray, fine to coarse SAND, trace Silt, trace Gravel | | | 40 | | -29.0 |
| | | End of exploration at 40 feet. | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-1

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 Allens Ave. Regulator Rebuild-Geo Suppor
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-2
SHEET: 1 of 2
PROJECT NO: 33554.80
REVIEWED BY: J. Marsland

Logged By: R. Ryan
Drilling Co.: Geologic
Foreman: D, Jacobs

Type of Rig: ATV
Rig Model: Tack 45
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 4
Date Start - Finish: 4/27/2016 - 4/28/2016

H. Datum:
V. Datum:
 NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size:

Groundwater Depth (ft.)

| Date | Time | Water Depth | Stab. Time |
|-----------|------|-------------|------------|
| 4/28/2016 | | 6 | 0 Hr |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | | | | | | | | | | 0.5 | TOPSOIL | | |
| 5 | | S-1 | 4-6 | 24 | 5 | 6 3 3 6 | 6 | S-1 : Loose, tan, fine to coarse SAND and GRAVEL, trace Silt (Wet) | 1 | | | FILL | |
| | | S-2 | 6-8 | 24 | 12 | 7 6 7 9 | 13 | S-2 : Medium dense, dark gray fine to coarse SAND and GRAVEL, trace Silt (wet) | | | 8 | | |
| 10 | | S-3 | 9-11 | 24 | 12 | 13 12 11 7 | 23 | S-3 : Medium dense, gray fine to coarse SAND, some Silt, trace Gravel, some odor (wet) | 2 | | 9.5 | CONCRETE | |
| 15 | | S-4 | 14-16 | 24 | 5 | 14 10 8 12 | 18 | S-4 : Medium dense, black fine to medium SAND, some Silt, very strong odor (wet) | | | | | |
| 20 | | S-5 | 19-21 | 24 | 12 | 14 19 14 17 | 33 | S-5 : Dense, black fine to coarse SAND, some Silt, little Gravel (strong odor) | | | | OUTWASH | |
| 25 | | S-6 | 24-26 | 24 | 13 | 14 15 16 15 | 31 | S-6 : Dense, black fine to coarse SAND, some Silt, trace Gravel, strong odor (wet) | | | | | |
| 30 | | S-7 | 29-31 | 24 | 18 | 15 21 | 46 | S-7 : Top: Dense, black fine to coarse SAND, some Silt, | | | | | |

REMARKS
 1 - Perched water at 4'± below grade.
 2 - Refusal at 8'± below grade. Core through concrete slab from 8'± to 9.5'±.

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-2

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

National Grid
 Allens Ave. Regulator Rebuild-Geo Suppor
 642 Allens Avenue
 Providence, Rhode Island

EXPLORATION NO.: GZ-2
SHEET: 2 of 2
PROJECT NO: 33554.80
REVIEWED BY: J. Marsland

Logged By: R. Ryan
Drilling Co.: Geologic
Foreman: D, Jacobs

Type of Rig: ATV
Rig Model: Tack 45
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 4
Date Start - Finish: 4/27/2016 - 4/28/2016

H. Datum:
V. Datum:
 NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5"

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size:

| Groundwater Depth (ft.) | | | |
|-------------------------|------|-------------|------------|
| Date | Time | Water Depth | Stab. Time |
| 4/28/2016 | | 6 | 0 Hr |

| Depth (ft) | Casing Blows/ Core Rate | Sample | | | | | SPT Value | Sample Description and Identification (Modified Burmister Procedure) | Remark | Field Test Data | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|-------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|--------|-----------------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | | | | 25 30 | | trace Gravel, some odor (wet) Bottom: Dense, gray fine SAND and SILT, slight odor (wet) | | | | | |
| 35 | | S-8 | 34-36 | 24 | 14 | 8 10 8 10 | 18 | S-8 : Medium dense, dark gray fine to coarse SAND, some Silt, slight odor (wet) | | | | OUTWASH | |
| 45 | | S-9 | 44-46 | 24 | 11 | 7 20 16 17 | 36 | S-9 : Dense, dark gray/black, fine to medium SAND, little Silt, some odor End of exploration at 4 feet. | | | 46 | | |
| 50 | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | |

REMARKS

See Log Key for explanation of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
GZ-2

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-1
SHEET: 1 of 1
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 10
Final Boring Depth (ft.): 22.5
Date Start - Finish: 6/3/2019 - 7/23/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NA

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 6/3/19 | 12:00 | N/A | 6.5 | N/A |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | | S-1 | 1.0 | | | | | S-1: Brown, fine SAND, some Silt, trace Gravel, dry (SM) | 0.7 | 1 | | | |
| | | S-2 | 3.0 | | | | | S-2: Brown, fine SAND and SILT, trace Gravel, dry (SM) | 5.3 | 2 | | | |
| 5 | 42 | | | | | | | | | | | | |
| | 70 | S-3 | 5.0 | | | | | S-3: Brown, fine to coarse SAND, fine Silt, trace Gravel, dry (SM) | 6.1 | | | | |
| | 115 | S-4 | 6.0-8.0 | 24 | 12 | 5 20 37 58 | 57 | S-4: Top 3": Very dense, gray, fine to coarse SAND, trace Gravel, trace Silt, moist, (SW-SM) | 22.4 | | | | |
| | 160 | | | | | | | Bottom 9": Very dense, black, fine to coarse SAND and GRAVEL, little Silt, trace Organic Silt, slight petroleum-like odor, moist (SM) | 46.0 | 3 | | | |
| 10 | | S-5 | 9.0-10.0 | 12 | 2 | 7 2 | - | S-5: Loose, black, fine to coarse SAND and GRAVEL, trace Silt, trace Wood, slight petroleum-like odor, wet (SW-SM) | 399.2 | | | | |
| | 24 | S-6 | 10.0-12.0 | 24 | 5 | 5 2 2 4 | 4 | S-6: Loose, black, fine to coarse SAND, little Gravel, little Silt, strong petroleum-like odor, wet (SM) | 323.9 | | | FILL | |
| | 45 | S-7 | 12.0-14.0 | 24 | 10 | 5 4 5 3 | 9 | S-7: Loose, black, fine to coarse SAND, some Gravel, trace Silt, strong petroleum-like odor, wet (SW-SM) | 292.0 | | | | |
| 15 | 64 | S-8 | 14.0-16.0 | 24 | 10 | 5 8 12 14 | 20 | S-8: Medium dense, black, fine to coarse SAND and GRAVEL, trace Silt, strong petroleum-like odor, slight sheen, wet (SW-SM) | 286.0 | | | | |
| | 18 | | | | | | | | | | | | |
| | 25 | S-9 | 16.0-18.0 | 24 | 7 | 24 18 14 15 | 32 | S-9: Dense, black, fine to coarse SAND and GRAVEL, little Silt, strong petroleum-like odor, slight sheen, wet (SM) | 258.6 | | | | |
| | 58 | | | | | | | | | | | | |
| | 159 | S-10 | 18.0-20.0 | 24 | 8 | 12 12 17 30 | 29 | S-10: Medium dense, black-gray, fine to coarse SAND, some Gravel, little Silt, strong petroleum-like odor, wet (SM) | 336.4 | | | | |
| 20 | 53 | | | | | | | | 189.1 | | | | |
| | 49 | S-11 | 20.0-22.0 | 24 | 10 | 14 36 43 16 | 79 | S-11: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, slight petroleum-like odor, wet (SM) | | | | | |
| | 157 | | | | | | | | | | | | |
| | 266/6" | | | | | | | | | 4 | 22.5 | -12.5 | |
| | | | | | | | | End of exploration at 22.5 feet | | | | | |
| 25 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |

REMARKS
 1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 6.5 feet bgs on 6/3/19.
 2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
 3 - Drilled through expected boulder between 8 and 9 feet bgs.
 4 - Casing refusal, obstruction encountered at 22.5 feet bgs. Drive shoe broke off casing and was abandoned at the bottom of the borehole. PRV-1 was terminated and relocated, see PRV-1A.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-1A
SHEET: 1 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.5
Final Boring Depth (ft.): 150.9
Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | No. | Sample | | | | Blows (per 6 in.) | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----|-------------|-----------|-----------|-------------------|-------------------|---|---|-----------|--------|-------------|---------------------|-------------|
| | | | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | | |
| 5 | | | | | | | | | | | 1 | | | |
| | | | | | | | | | | | 2 | | | |
| | | | | | | | | | | | 3 | | | |
| | | | | | | | | | | | 4 | | | |
| | | S-1 | 22.0-24.0 | 24 | 13 | 19 32 | 66 | S-1: Top 11": WOOD, slight petroleum-like odor, wet | 14.2 | 5 | | | | |
| | | S-2 | 24.0-26.0 | 24 | 10 | 8 24 | 62 | Bottom 2": Gray, SILT and GRAVEL, some Sand, trace Wood, slight petroleum-like odor, wet (ML) | 47.2 | | | | | |
| | 90 | | | | | 38 62 | | S-2: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | 1.6 | | | | | |
| | 108 | | | | | | | | | | 26 | | -16.5 | |
| | 153 | | | | | | | | | | | | | |
| | 168 | | | | | | | | | | | | | |
| | 207 | S-3 | 29.0-31.0 | 24 | 8 | 20 16 | 40 | S-3: Dense, gray, fine to coarse SAND, some Gravel, little Silt, | 0.6 | | | | | |
| | 30 | | | | | | | | | | | | | |

REMARKS

- 1 - Test boring PRV-1A offset 15' west from PRV-1 due to obstruction encountered at PRV-1.
- 2 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 6 feet bgs on 7/23/19.
- 3 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
- 4 - Timber fragments observed in drill fluid between 9 and 22 feet bgs.
- 5 - Drilled to 22 feet bgs and began sampling at PRV-1 termination depth.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-1A
SHEET: 2 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.5
Final Boring Depth (ft.): 150.9
Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----------|-------------|-----------|-----------|-------------------|---|---|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 65 | | | | | | 24 31 | | wet (SM) | | | | | |
| 90 | | | | | | | | | | | | | |
| 144 | | | | | | | | | | | | | |
| 154 | | | | | | | | | | | | | |
| 167 | S-4 | 34.0-36.0 | 24 | 2 | 8 8 | 17 | S-4: Medium dense, gray, fine to coarse GRAVEL and SAND, trace Silt, wet (SW-SM) | | 0.5 | | | | |
| 84 | | | | | 9 13 | | | | | | | | |
| 76 | | | | | | | | | | | | | |
| 89 | | | | | | | | | | | | | |
| 99 | | | | | | | | | | | | | |
| 151 | S-5 | 39.0-41.0 | 24 | 11 | 9 7 | 15 | S-5: Medium dense, gray/brown, fine to coarse SAND, trace Gravel, trace Silt, wet (SW-SM) | | 0.0 | 6 | | | |
| 40 | | | | | 8 7 | | | | | | | | |
| 45 | S-6 | 44.0-46.0 | 24 | 6 | 16 14 | 30 | S-6: Medium dense, gray fine to coarse GRAVEL, some Sand, trace Silt, wet (GW-GM) | | 0.0 | | | GLACIAL OUTWASH | |
| 29 | | | | | 16 13 | | | | | | | | |
| 84 | | | | | | | | | | | | | |
| 67 | S-7 | 49.0-51.0 | 24 | 1 | 26 16 | 37 | S-7: Dense, brown/gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | | 0.0 | | | | |
| 40 | | | | | 21 17 | | | | | | | | |
| 42 | | | | | | | | | | | | | |
| 58 | | | | | | | | | | | | | |
| 72 | | | | | | | | | | | | | |
| 81 | S-8 | 54.0-56.0 | 24 | 6 | 23 18 | 39 | S-8: Dense, gray/brown, fine to coarse SAND and GRAVEL, some Silt, wet (SM) | | 0.0 | | | | |
| 69 | | | | | 21 19 | | | | | | | | |
| 35 | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | |
| 75 | S-9 | 59.0-61.0 | 24 | 9 | 15 15 | 45 | S-9: Dense, brown, fine to coarse SAND and GRAVEL, some | | 0.0 | | | | |
| 60 | | | | | | | | | | | | | |

REMARKS 6 - 5-inch casing driven to 39 feet bgs. Driller proceeded with 4-inch casing.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-1A
SHEET: 3 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.5
Final Boring Depth (ft.): 150.9
Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-----------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 54 | | | | | | 30 20 | | Silt, wet (SM) | | | | | |
| 65 | | | | | | | | | | | | | |
| 65 | | S-10 | 64.0-66.0 | 24 | 10 | 27 23 27 16 | 50 | S-10: Dense, gray/brown, fine to coarse GRAVEL, some Sand, little Silt, wet (GM) | 0.0 | | | | |
| 70 | | S-11 | 69.0-71.0 | 24 | 10 | 15 9 10 10 | 19 | S-11: Medium dense, gray, SILT, some fine Sand, wet (ML) | 0.0 | | | | |
| 75 | | S-12 | 74.0-76.0 | 24 | 12 | 10 9 12 11 | 21 | S-12: Medium dense, gray Clayey SILT, trace Sand, wet (ML) | 0.0 | | | | GLACIAL OUTWASH |
| 80 | | S-13 | 79.0-81.0 | 24 | 12 | 17 12 17 13 | 29 | S-13: Medium dense, gray, fine SAND and SILT, trace Gravel, wet (SM) | 0.0 | | | | |
| 85 | | S-14 | 84.0-86.0 | 24 | 14 | 24 10 13 17 | 23 | S-14: Medium dense, gray, fine SAND, trace Silt, wet (SP-SM) | 0.0 | | | | |
| 90 | | S-15 | 89.0-91.0 | 24 | 16 | 13 12 | 34 | S-15: Dense, gray, fine SAND, trace Silt, wet (SP-SM) | 0.0 | | | | |

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-1A
 SHEET: 5 of 6
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
 Drilling Co.: Geologic Inc.
 Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
 Rig Model: CME-75
 Drilling Method:
 Drive & Wash

Boring Location: See Plan
 Ground Surface Elev. (ft.): 9.5
 Final Boring Depth (ft.): 150.9
 Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
 V. Datum: NAVD 88

Hammer Type: Automatic Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample No. | Sample | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|------------|-------------|-----------|-----------|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | 119.4 | | | | | | | | | | |
| 125 | | S-22 | 124.0-124.4 | 5 | 3 | 100 /5" | R | S-22: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | 0.0 | | | | |
| 130 | | S-23 | 129.0-130.3 | 15 | 4 | 45 83 100 /3" | R | S-23: Very dense, gray, fine to coarse SAND, little Gravel, little Silt, wet | 0.0 | 9 | | | |
| 135 | | S-24 | 134.0-136.0 | 24 | 14 | 54 62 58 72 | | S-24: Very dense, gray, fine to coarse SAND, little Gravel, little Silt, wet (SM) | 0.0 | | | GLACIAL TILL | |
| 140 | | S-25 | 139.0-141.0 | 24 | 9 | 10 17 32 79 | | S-25: Dense, gray, fine to medium SAND, trace Gravel, trace Silt, wet (SP-SM) | 0.0 | | | | |
| 145 | | S-26 | 144.0-146.0 | 24 | 16 | 29 21 29 65 | | S-26: Dense, gray, fine to coarse SAND, trace Silt, wet (SP-SM) | 0.0 | | | | |
| 150 | | S-27 | 149.0- | 23 | 12 | 9 13 | | S-27: Very dense, gray, SILT, some fine Sand, wet (ML) | 0.0 | 10 | | | |

REMARKS
 9 - Sample S-23 contained approximately 20 inches of blowing sands.
 10 - 3-inch casing driven to 149 feet bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-1A
SHEET: 6 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9.5
Final Boring Depth (ft.): 150.9
Date Start - Finish: 7/23/2019 - 7/30/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/25/19 | 07:45 | 1 day | 6 | 39 |
| 7/26/19 | 07:45 | 1 day | 7.9 | 94 |
| 7/29/19 | 07:45 | 3 Days | 9.5 | 124 |

| Depth (ft) | Casing Blows/ (Core Rate) | No. | Sample | | | | Blows (per 6 in.) | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----|-----------|-----------|-------------------|-----------|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | | | |
| 150.9 | | | | | | 63 | 100/5" | | | | | 150.9 | GLACIAL TILL | 141.4 |
| | | | | | | | | | | | | | | |
| 155 | | | | | | | | | | | | | | |
| 160 | | | | | | | | | | | | | | |
| 165 | | | | | | | | | | | | | | |
| 170 | | | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | | | |
| 180 | | | | | | | | | | | | | | |

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-1A

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-2
SHEET: 1 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | | S-1 | 1.0 | | | | | S-1: Brown, fine to coarse SAND, little Gravel, little Silt, dry (SM) | 1.0 | 1 | | | |
| | | S-2 | 4.0 | | | | | S-2: Brown, fine to coarse SAND and GRAVEL, little Silt, dry (SM) | 0.3 | 2 | | | |
| 5 | | S-3 | 5.0 | | | | | S-3: Brown, fine to coarse SAND, some Gravel, little Silt, dry (SM) | 0.0 | | | | |
| | | S-4 | 6.0-8.0 | 24 | 2 | 11 10 7 10 | 17 | S-4: Medium dense, brown, fine to coarse SAND and GRAVEL, trace Silt, dry (SW-SM) | 5.1 | | | | |
| | | S-5 | 8.0-10.0 | 24 | 1 | 17 20 27 13 | 47 | S-5: Dense, black, fine to coarse SAND and SILT, trace Gravel, wet (SM) | 77.8 | | | FILL | |
| 10 | | S-6 | 10.0-12.0 | 24 | 2 | 11 71 37 79 | 108 | S-6: Very dense, gray, fine GRAVEL and SAND, trace Silt (wet) (GM) | 125.7 | | | | |
| | | S-7 | 14.0-16.0 | 24 | 10 | 21 20 28 45 | 48 | S-7: Dense, gray, fine to coarse SAND, trace Silt, slight petroleum-like odor, wet (SW-SM) | 27.2 | 3 | | | |
| | | S-8 | 16.0-18.0 | 24 | 12 | 7 8 12 12 | 20 | S-8: Medium dense, gray, fine to coarse SAND, trace Silt, wet (SW-SM) | 0.4 | | 16 | -7.0 | |
| | | S-9 | 18.0-20.0 | 24 | 8 | 10 7 8 11 | 15 | S-9: Medium dense, gray, fine to coarse SAND, trace Silt, wet (SW-SM) | 0.2 | | | | |
| 20 | | S-10 | 24.0-26.0 | 24 | WOH | 7 7 8 8 | 15 | S-10: NO RECOVERY | | | | GLACIAL OUTWASH | |
| | | S-11 | 29.0-31.0 | 24 | 2 | 5 5 | 11 | S-11: Medium dense, gray, fine to coarse SAND, trace Silt, wet | 0.2 | 4 | | | |

REMARKS

- 1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 5.5 feet bgs on 6/3/19.
- 2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
- 3 - Sample S-7 obtained using a 3-inch split spoon.
- 4 - 5-inch casing driven to 29 feet bgs. Driller proceeded with 4-inch casing.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-2

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-2
SHEET: 2 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | WOH | | | | | 6 | 18 | (SW-SM) | | | | | |
| 26 | | | | | | | | | | | | | |
| 69 | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | |
| 74 | S-12 | 34.0-36.0 | 24 | WOH | WOH 3 | 7 | | S-12: NO RECOVERY | | | | | |
| 28 | | | | | 4 | 6 | | | | | | | |
| 60 | | | | | | | | | | | | | |
| 112 | | | | | | | | | | | | | |
| 107 | | | | | | | | | | | | | |
| 131 | S-13 | 39.0-41.0 | 24 | 5 | 65 | 51 | 69 | S-13: Very dense, gray, GRAVEL, some Silt, trace Sand, wet (GM) | 0.0 | | | | |
| 162 | | | | | 18 | 15 | | | | | | | |
| 247 | | | | | | | | | | | | | |
| 310 | | | | | | | | | | | | | |
| 63 | | | | | | | | | | | | | |
| 87 | S-14 | 44.0-46.0 | 24 | 9 | 17 | 11 | 33 | S-14: Dense, gray, GRAVEL, little Silt, trace Sand, wet (GM) | 0.0 | | | | |
| 62 | | | | | 22 | 15 | | | | | | | |
| 66 | | | | | | | | | | | | | |
| 115 | | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | | |
| 181 | S-15 | 49.0-51.0 | 24 | 10 | 24 | 22 | 40 | S-15: Dense, brown, SILT and SAND, trace Gravel, wet (ML) | 0.0 | | | | |
| 101 | | | | | 18 | 16 | | | | | | | |
| 127 | | | | | | | | | | | | | |
| 110 | | | | | | | | | | | | | |
| 123 | | | | | | | | | | | | | |
| 93 | S-16 | 54.0-56.0 | 24 | 11 | 23 | 17 | 41 | S-16: Dense, brown, fine to coarse SAND, little Silt, trace Gravel, wet (SM) | 0.0 | | | | |
| 30 | | | | | 24 | 28 | | | | | | | |
| 36 | | | | | | | | | | | | | |
| 69 | | | | | | | | | | | | | |
| 132 | | | | | | | | | | | | | |
| 139 | S-17 | 59.0-61.0 | 24 | 8 | 8 | 12 | 25 | S-17: Medium dense, gray, fine to coarse SAND and GRAVEL, | 0.0 | | | | |

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-2

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-2
SHEET: 3 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| 68 | | | | | | 13 | 13 | little Silt, wet (SM) | | | | | |
| 56 | | | | | | | | | | | | | |
| 66 | | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | | |
| 126 | S-18 | 64.0-66.0 | 24 | 9 | 21 | 15 | 30 | S-18: Medium dense, gray, fine to coarse SAND, some Silt, trace Gravel, wet (SM) | 0.0 | | | | |
| 96 | | | | | | 15 | 12 | | | | | | |
| 94 | | | | | | | | | | | | | |
| 106 | | | | | | | | | | | | | |
| 232 | | | | | | | | | | | | | |
| 313 | S-19 | 69.0-71.0 | 24 | 16 | 20 | 18 | 44 | S-19: Hard, dark gray SILT, trace Sand, wet (ML) | 0.0 | | | | |
| 172 | | | | | | 26 | 36 | | | | | | |
| 140 | | | | | | | | | | | | | |
| 131 | | | | | | | | | | | | | |
| 116 | | | | | | | | | | | | | |
| 112 | S-20 | 74.0-76.0 | 24 | 10 | 13 | 22 | 34 | S-20: Dense, dark gray, fine to coarse SAND, trace Silt, trace Gravel, wet (SW-SM) | 0.0 | | | | |
| 115 | | | | | | 12 | 12 | | | | | | |
| 117 | | | | | | | | | | | | | |
| 133 | | | | | | | | | | | | | |
| 178 | | | | | | | | | | | | | |
| 151 | S-21 | 79.0-81.0 | 24 | 8 | 17 | 14 | 32 | S-21: Dense, dark gray, SILT and fine SAND, trace Gravel, wet (SM) | 0.0 | | | | |
| 160 | | | | | | 18 | 40 | | | | | | |
| 146 | | | | | | | | | | | | | |
| 155 | | | | | | | | | | | | | |
| 176 | | | | | | | | | | | | | |
| 205 | S-22 | 84.0-86.0 | 24 | 2 | 25 | 19 | 32 | S-22: Dense, dark gray, fine to coarse GRAVEL and SAND, little Silt, wet (GM) | 0.0 | | | | |
| 260 | | | | | | 13 | 15 | | | | | | |
| 240 | | | | | | | | | | | | | |
| 221 | | | | | | | | | | | | | |
| 137 | | | | | | | | | | | | | |
| 157 | S-23 | 89.0-91.0 | 24 | 2 | 24 | 30 | 57 | S-23: Very dense, gray, fine to coarse SAND and GRAVEL, little | 0.0 | 5 | | | |

REMARKS
5 - 4-inch casing driven to 89 feet bgs. Driller proceeded with 3-inch casing.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-2

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-2
SHEET: 4 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | | | | | | 27 75 | | Silt, wet (SM) | | | | | |
| 95 | | S-24 | 94.0-96.0 | 24 | 9 | 21 8 11 12 | 19 | S-24: Medium dense, gray, fine to coarse SAND, little Silt, trace Gravel, wet (SM) | 0.0 | | 96 | GLACIAL OUTWASH | -87.0 |
| 100 | | S-25 | 99.0-101.0 | 24 | 12 | 17 23 24 52 | 47 | S-25: Dense, gray, fine to coarse SAND and fine GRAVEL, some Silt, wet (SM) | 0.0 | | | | |
| 105 | | S-26 | 104.0-106.0 | 24 | 8 | 44 54 44 51 | 98 | S-26: Top 3": Very dense, gray, GRAVEL (GW) Bottom 5": Very dense, gray, fine to coarse SAND and SILT, trace Gravel, wet (SM) | 0.0 | | | | |
| 110 | | S-27 | 109.0-110.4 | 17 | 2 | 7 54 100 /5" | R | S-27: Very dense, gray, fine to coarse SAND, little Silt, trace Gravel, wet (SM) | 0.0 | | | | |
| 115 | | S-28 | 114.0-115.3 | 15 | 15 | 35 46 100 /3" | R | S-28: Very dense, gray, fine to coarse SAND, trace Gravel, trace Silt, wet (SW-SM) | 0.0 | | | | |
| 120 | | S-29 | 118.0-120.0 | 24 | 24 | 59 41 33 100 | 74 | S-29: Top 12": Very dense, gray, fine to coarse SAND and fine Gravel, some Silt, wet (SM) Bottom 12": Very dense, Gray, fine to coarse SAND, little Silt, | 0.0 | 6 7 | | | |

REMARKS

6 - Sample S-29 taken at 118 feet bgs due to stick up height of casing resulting from telescoping casing. Driller proceeded to drive all casing to a stick-up height of 1.5 feet after taking sample S-29.

7 - Approximately 9 inches of stick-up observed on split spoon after flushing casing at 119 feet bgs due to blowing sands.

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Exploration No.:
PRV-2

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-2
SHEET: 5 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|--------------------|-----------|--|-----------|--------|-------------|---------------------|--------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| | | | | | | | | trace Gravel, wet (SM) | | | | | |
| 125 | | S-30 | 124.0-126.0 | 24 | 12 | 45 22 16 18 | 38 | S-30: Dense, gray, fine to coarse SAND, some Gravel, little Silt, wet (SM) | 0.0 | | | | |
| 130 | | S-31 | 129.0-130.9 | 23 | 24 | 35 40 70 100/5" | 110 | S-31: Very dense, gray, fine to coarse SAND, little Silt, trace Gravel, wet (SM) | 0.0 | 8 | | | |
| 135 | | S-32 | 134.0-136.0 | 24 | 10 | 42 47 87 34 | 134 | S-32: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | 0.0 | | | | GLACIAL TILL |
| 140 | | S-33 | 139.0-141.0 | 24 | 18 | 24 48 55 100 | 103 | S-33: Top 10": Very dense, gray, fine to coarse SAND, little Silt, trace Gravel, wet (SM) Bottom 8": Very dense gray, fine to coarse GRAVEL and SAND, some Silt, wet (GM) | 0.0 | | | | |
| 145 | | S-34 | 144.0-146.0 | 24 | 14 | 39 40 59 100 | 99 | S-34: Very dense, gray, fine to coarse SAND, some Gravel, little Silt, wet (SM) | 0.0 | | | | |
| 150 | | S-35 | 149.0- | 15 | 4 | 117 100/3" | R | S-35: Very dense, dark gray SILT, some Sand, trace Gravel, wet | 0.0 | 9 | 149.75 | | -140.8 |

REMARKS
8 - Approximately 6 inches of stick-up observed on split spoon after flushing casing at 129 feet bgs due to blowing sands.
9 - 3-inch casing spun to 149 feet bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-2

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-2
 SHEET: 6 of 6
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 149.75
Date Start - Finish: 6/3/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|------------|-------|--------|
| 7/1/19 | 07:45 | 3 Days | 5.7 | |
| 7/3/19 | 07:45 | 1 Day | 1.7 | |
| 7/8/19 | 07:45 | 5 Days | 10 | |

| Depth (ft) | Casing Blows/ (Core Rate) | No. | Sample | | | | Blows (per 6 in.) | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----|-------------|-----------|-----------|--|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | | Depth (ft.) | Pen. (in) | Rec. (in) | | | | | | | | | |
| | | | 149.75 | | | | | (ML) | | | | | | |
| 155 | | | | | | | | | | | | | | |
| 160 | | | | | | | | | | | | | | |
| 165 | | | | | | | | | | | | | | |
| 170 | | | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | | | |
| 180 | | | | | | | | | | | | | | |

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-2

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-3
SHEET: 1 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|-------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 8/1/19 | 07:45 | 1 day | 8 | 39 |
| 8/2/19 | 07:45 | 1 day | 11.6 | 74 |
| 8/5/19 | 09:15 | ~15 Minutes | 14.7 | 99 |

| Depth (ft) | Casing Blows / (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|---------------------------------|----------------------------|--------|-------------|-----------|-----------|-------------------|-------------------|-----------|---|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| 5 10 15 20 25 30 | 23 | S-1 | 1.0 | | | | | | S-1: Brown, SILT, some Sand, trace fine Gravel, dry (ML) | 1 | | | |
| | | S-2 | 2.0 | | | | | | S-2: Brown, fine to coarse SAND and SILT, little fine Gravel, dry (SM) | 2 | | | |
| | | S-3 | 3.5 | | | | | | S-3: Brown fine to coarse SAND, some Silt, trace fine Gravel, dry (SM) | | | | |
| | | S-4 | 4.0 | | | | | | S-4: Brown, fine to coarse SAND, some Silt, trace fine Gravel, dry (SM) | | | | |
| | 30 | S-5 | 6.0-8.0 | 24 | 3 | 8 3 3 11 | 6 | 6 | S-5: Loose, brown, fine to coarse SAND, some Silt, trace fine Gravel, slight petroleum-like odor, moist (SM) | | | | |
| | | S-6 | 8.0-10.0 | 24 | 7 | 8 10 16 17 | 26 | 26 | S-6: Medium dense, black, fine to coarse SAND, some Silt, little Gravel, slight petroleum-like odor, wet (SM) | | | | |
| | 24 | S-7 | 10.0-12.0 | 24 | 2 | 18 5 4 5 | 9 | 9 | S-7: Loose, gray, GRAVEL, trace fine to coarse Sand, trace Silt, wet (GW-GM) | | | | |
| | | S-8 | 12.0-14.0 | 24 | 0/1 | 6 3 5 5 | 8 | 8 | S-8: Loose, brown, fine to medium SAND, some Silt, wet (SM) | 3 | | | |
| | | S-9 | 14.0-16.0 | 24 | 8 | 8 6 3 3 | 9 | 9 | S-9: Loose, brown fine to coarse SAND, some Silt, trace Gravel, slight petroleum-like odor, wet (SM) | | | FILL | |
| | | S-10 | 16.0-18.0 | 24 | 13 | 4 7 7 8 | 14 | 14 | S-10: Medium dense, gray/brown, fine to coarse SAND, little Silt, trace fine Gravel, trace Wood, wet (SM) | | | | |
| | 31 | S-11 | 18.0-20.0 | 24 | 0/6 | 10 4 1 2 | 5 | 5 | S-11: Loose, brown, fine to coarse SAND, little Silt, trace fine Gravel, wet (SM) | 4 | | | |
| | | S-12 | 20.0-20.5 | 5.5 | 4 | 100 /6" | R | R | S-12: Brown/gray, fine GRAVEL, some fine to coarse Sand, little Silt, wet (GM) | 5 | | | |
| | 54 | S-13 | 22.0-24.0 | 24 | 4 | 7 6 6 6 | 12 | 12 | S-13: Medium dense, gray, GRAVEL, little Sand, trace Silt, wet (GW-GM) | | | | |
| | | S-14 | 24.0-26.0 | 24 | 1 | 14 9 4 5 | 13 | 13 | S-14: Medium dense, gray, GRAVEL, little fine to coarse Sand, trace Silt, wet (GW-GM) | 6 | | | |
| | | S-15 | 26.0-28.0 | 24 | 4 | 8 4 4 6 | 8 | 8 | S-15: Loose, brown/gray, fine to medium SAND, some Silt, wet (SM) | | | | |
| | | S-16 | 28.0-30.0 | 24 | 1 | 7 4 7 8 | 11 | 11 | S-16: Medium dense, brown, fine to medium SAND, little Silt, wet (SM) | | | | |

- REMARKS**
- 1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 6 feet bgs on 6/3/19.
 - 2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
 - 3 - Gravel observed in spoon tip of samples S-7 and S-8.
 - 4 - No recovery for sample S-11. Driller pushed a 3-inch spoon to obtain sample for 18 feet to 20 feet bgs.
 - 5 - Drilled through an expected boulder between 20.5 and 22 feet bgs.
 - 6 - Gravel observed in spoon tip of sample S-14. Driller pushed a 3-inch spoon to obtain sample for 24 feet to 26 feet bgs.

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Exploration No.:
PRV-3

GZA TEMPLATE TEST BORING - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 9/24/19 15:48 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-3
SHEET: 2 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|-------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 8/1/19 | 07:45 | 1 day | 8 | 39 |
| 8/2/19 | 07:45 | 1 day | 11.6 | 74 |
| 8/5/19 | 09:15 | ~15 Minutes | 14.7 | 99 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | |
| 35 | | S-17 | 34.0-36.0 | 24 | 2 | 12 13 26 21 | 39 | S-17: Dense, gray/brown, GRAVEL, little fine to coarse Sand, trace Silt, wet (GW-GM) | | | | |
| 89 | | | | | | | | | | | | |
| 121 | | | | | | | | | | | | |
| 231 | | | | | | | | | | | | |
| 297 | | S-18 | 39.0-41.0 | 24 | 10 | 19 21 22 27 | 43 | S-18: Dense, GRAVEL and SILT, little fine to coarse Sand, wet (GM) | | | | |
| 40 | | | | | | | | | | | | |
| 45 | | S-19 | 44.0-46.0 | 24 | 9 | 20 18 20 25 | 38 | S-19: Dense, brown, GRAVEL, some fine to coarse Sand, some Silt, moist (GM) | | | | |
| 50 | | S-20 | 49.0-51.0 | 24 | 8 | 20 14 18 50 | 32 | S-20: Dense, brown, GRAVEL, some Silt, some fine to coarse SAND, moist (SM) | | | | |
| 213 | | | | | | | | | | | | |
| 297 | | S-21 | 54.0-56.0 | 24 | 0 | 22 24 20 20 | 44 | S-21: NO RECOVERY | 7 | | | |
| 140 | | | | | | | | | | | | |
| 113 | | | | | | | | | | | | |
| 127 | | | | | | | | | | | | |
| 151 | | S-22 | 59.0-61.0 | 24 | 5 | 6 29 | 64 | S-22: Very dense, gray, GRAVEL and fine to coarse SAND, some Silt, | 8 | | | |
| 60 | | | | | | | | | | 60 | -51.0 | |

REMARKS
 7 - Gravel observed in spoon tip of sample S-21.
 8 - 5-inch casing driven to 59 feet bgs. Driller proceeded with 4-inch casing.

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Exploration No.:
PRV-3

GZA TEMPLATE TEST BORING - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 9/24/19 15:48 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-3
SHEET: 3 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|-------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 8/1/19 | 07:45 | 1 day | 8 | 39 |
| 8/2/19 | 07:45 | 1 day | 11.6 | 74 |
| 8/5/19 | 09:15 | ~15 Minutes | 14.7 | 99 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-------------------|--|---|--------|-----------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| | | | | | | | 35 30 | | wet (GM) | | | | |
| 65 | | S-23 | 64.0-66.0 | 24 | 7 | 26 94 101 20 | 195 | S-23: Very dense, gray, fine to coarse GRAVEL and fine to coarse Sand, little Silt, wet (GM) | | | | | |
| 70 | | S-24 | 69.0-71.0 | 24 | 2 | 21 32 33 21 | 65 | S-24: Very dense, gray, GRAVEL, some fine to coarse Sand, little Silt, wet (GM) | | | | | |
| 75 | | S-25 | 74.0-76.0 | 24 | 3 | 63 17 19 12 | 36 | S-25: Dense, gray, GRAVEL, trace fine to coarse Sand, trace Silt, wet (GW-GM) | | | GLACIAL OUTWASH | | |
| 80 | | S-26 | 79.0-81.0 | 24 | 8 | 30 27 30 43 | 57 | S-26: Very dense, gray, GRAVEL, some fine to coarse Sand, little Silt, wet (GM) | | | | | |
| 85 | | S-27 | 84.0-86.0 | 24 | 6 | 16 17 14 17 | 31 | S-27: Dense, gray, fine to coarse SAND and fine GRAVEL, some Silt, wet (SM) | | | | | |
| 90 | | S-28 | 89.0-91.0 | 24 | 6 | 20 22 | 44 | S-28: Dense, gray, fine to coarse SAND, some Silt, trace fine Gravel, | | | | | |
| | | | | | | | | | | 90 | -81.0 | | |

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
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121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-3
SHEET: 4 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|-------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 8/1/19 | 07:45 | 1 day | 8 | 39 |
| 8/2/19 | 07:45 | 1 day | 11.6 | 74 |
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| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|--------------------|-------------------|--|---|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| | | | | | | | 22 14 | | wet (SM) | | | | |
| 95 | | S-29 | 94.0-96.0 | 24 | 7 | 28 15 16 12 | 31 | S-29: Dense, gray, fine to coarse SAND, some Silt, little Gravel, wet (SM) | | | | | |
| 100 | | S-30 | 99.0-101.0 | 24 | 6 | 29 19 11 12 | 30 | S-30: Dense, gray, fine to coarse SAND, some Silt, little Gravel, wet (SM) | | | | | |
| 105 | | S-31 | 104.0-106.0 | 24 | 8 | 29 23 18 17 | 41 | S-31: Dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | | 106 | -97.0 | | |
| 110 | | S-32 | 109.0-111.0 | 24 | 12 | 36 48 51 51 | 99 | S-32: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | | | | | |
| 115 | | S-33 | 114.0-115.9 | 23 | 12 | 53 44 58 100/5" | 102 | S-33: Very dense, gray, fine to coarse SAND, some fine Gravel, little Silt, wet (SM) | | | | | |
| 120 | | S-34 | 119.0- | 24 | 12 | 43 28 | 75 | S-34: Very dense, gray, fine SAND, trace fine Gravel, trace Silt, wet (SM) | | | | | |

REMARKS

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121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-3
SHEET: 5 of 7
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|-------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 8/1/19 | 07:45 | 1 day | 8 | 39 |
| 8/2/19 | 07:45 | 1 day | 11.6 | 74 |
| 8/5/19 | 09:15 | ~15 Minutes | 14.7 | 99 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|---------------|--|--------|-------------|---------------------|--------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | |
| | | | 121.0 | | | 47 | 53 | (SP-SM) | | | | |
| 125 | | S-35 | 124.0-126.0 | 24 | 12 | 33 | 25 27 33 | S-35: Very dense, gray, fine to coarse SAND, trace Silt, trace fine Gravel, wet (SW-SM) | 9 | | | |
| 130 | | S-36 | 129.0-131.0 | 24 | 12 | 35 | 30 40 41 | S-36: Very dense, gray, fine to coarse SAND, some fine Gravel, trace Silt, moist (SW-SM) | | | | |
| 135 | | S-37 | 134.0-135.5 | 18 | 10 | 31 | 50 100 | S-37: Very dense, gray, fine to coarse SAND, little fine Gravel, trace Silt, moist (SW-SM) | | | | GLACIAL TILL |
| 140 | | S-38 | 139.0-141.0 | 24 | 12 | 29 | 28 31 46 | S-38: Very dense, gray, fine to coarse SAND and fine GRAVEL, little Silt, wet (SM) | 10 | | | |
| 145 | | S-39 | 144.0-146.0 | 24 | 18 | WOR | WOR WOR 20 | S-39: Very loose, gray, fine to medium SAND, trace Silt, wet (SP-SM) | 11 | | | |
| 150 | | S-40 | 149.0- | 24 | 17 | 29 | 27 | S-40: Very dense, gray, fine SAND, little Silt, wet (SM) | | | | |

REMARKS
9 - Approximately 3 inches of spoon stick-up observed during sampling 124 feet to 126 feet bgs.
10 - 4-inch casing spun to 139 feet bgs.
11 - Driller began using drill mud at 144 feet bgs. Initial blow counts may not be representative of actual conditions.

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 Providence, Rhode Island

EXPLORATION NO.: PRV-3
 SHEET: 6 of 7
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
 Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 9
Final Boring Depth (ft.): 200.5
Date Start - Finish: 7/31/2019 - 8/9/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|--------|-------|-------------|-------|--------|
| 8/1/19 | 07:45 | 1 day | 8 | 39 |
| 8/2/19 | 07:45 | 1 day | 11.6 | 74 |
| 8/5/19 | 09:15 | ~15 Minutes | 14.7 | 99 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-------------------|-----------|---|---|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | Blows (per 6 in.) | | | | | | |
| | | | 151.0 | | | | 47 | 40 | | | | | |
| 155 | | S-41 | 154.0-156.0 | 24 | 24 | 24 | 22 | 36 | 58 | S-41: Very dense, gray, fine SAND, trace Silt, wet (SP-SM) | | | |
| 160 | | S-42 | 159.0-161.0 | 24 | 12 | 23 | 24 | 42 | 66 | S-42: Very dense, gray, fine SAND, trace Silt, wet (SP-SM) | | | |
| 165 | | S-43 | 164.0-166.0 | 24 | 18 | 18 | 22 | 26 | 48 | S-43: Dense, gray, fine SAND, trace Silt, wet (SP-SM) | | | |
| 170 | | S-44 | 169.0-171.0 | 24 | 19 | 12 | 19 | 26 | 45 | S-44: Hard, dark gray, SILT, trace fine Sand, wet (ML) | | | |
| 175 | | S-45 | 174.0-176.0 | 24 | 9 | 20 | 15 | 12 | 27 | S-45: Medium dense, dark gray, SILT, some fine to coarse Sand, little fine Gravel, wet (ML) | | | |
| 180 | | S-46 | 179.0- | 16 | 12 | 44 | 36 | | R | S-46: WEATHERED ROCK | 12 | 177 | -168.0 |

REMARKS
 12 - Increase in drill resistance observed at 177 feet bgs.

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GZA
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Engineers and Scientists

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National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-4
SHEET: 1 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.75
Final Boring Depth (ft.): 151
Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | | |
| 5 | 120 | S-1 | 1.5 | | | | | S-1: Brown, SILT and fine SAND, dry (ML) | 0.0 | 1 | | | |
| | | S-2 | 3.0 | | | | | S-2: Brown, fine to coarse SAND, some Gravel, some Silt, dry (SM) | 0.3 | 2 | | | |
| | | S-3 | 4.0 | | | | | S-3: Black, fine to coarse SAND, little Silt, trace Gravel, dry (SM) | 0.6 | | | | |
| | | S-4 | 6.0-8.0 | 24 | 10 | 8 7 | 18 | S-4: Medium dense, brown, SILT, little Sand, trace Gravel, moist (ML) | 0.0 | | | | |
| | | S-5 | 8.0-10.0 | 24 | 10 | 19 19 | 33 | S-5: Dense, brown, fine to coarse SAND, some Gravel, little Silt, moist (SM) | 0.0 | | | | |
| | | S-6 | 10.0-12.0 | 24 | 12 | 12 11 | 32 | S-6: Dense, gray/brown, fine to coarse SAND, some Gravel, little Silt, wet (SM) | 0.0 | | | FILL | |
| | | S-7 | 12.0-14.0 | 24 | 3 | 18 25 | 65 | S-7: Very dense, gray, fine to coarse GRAVEL and SAND, trace Silt, wet (GW-GM) | 0.8 | 3 | | | |
| | | S-8 | 14.0-16.0 | 24 | 9 | 22 15 | 52 | S-8: Very dense, gray, fine to coarse SAND, some Gravel, trace Silt, wet (SW-SM) | 61.3 | | | | |
| | | S-9 | 19.0-21.0 | 24 | 1 | 17 11 | 36 | S-9: Dense, gray, fine GRAVEL, some Sand, trace Silt, wet (GW-GM) | 1.6 | 5 | | | |
| | | S-10 | 24.0-26.0 | 24 | 2.5 | 16 17 | 62 | S-10: Very dense, gray, SILT and SAND, trace Gravel, wet (ML) | 3.2 | | | | |
| | | S-11 | 29.0-31.0 | 24 | 12 | 12 13 | 40 | S-11: Hard, brown, SILT, trace Sand, moist (ML) | | | | | |

REMARKS

- 1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 6.5 feet bgs on 6/3/19.
- 2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.
- 3 - Sample S-7 contained approximately 12 inches of drill wash. Gravel observed in spoon tip.
- 4 - Drilled through expected boulder between 16 and 17 feet bgs.
- 5 - Sample S-9 contained approximately 8 inches of drill wash. Gravel observed in spoon tip.

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Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



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HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-4
SHEET: 2 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.75
Final Boring Depth (ft.): 151
Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----------|-------------|-----------|-----------|-------------------|---|---|-----------|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | | | | 27 12 | | | 0.0 | | | | |
| 62 | | | | | | | | | | | | | |
| 245 | | | | | | | | | | | | | |
| 273 | | | | | | | | | | | | | |
| 200 | S-12 | 34.0-36.0 | 24 | 12 | 22 19 | 46 | S-12: Dense, gray, fine to coarse, SAND , some Silt, little Gravel, wet (SM) | 0.0 | | | | | |
| 131 | | | | | 27 27 | | | | | | | | |
| 170 | | | | | | | | | | | | | |
| 165 | | | | | | | | | | | | | |
| 182 | | | | | | | | | | | | | |
| 137 | S-13 | 39.0-41.0 | 24 | 10.5 | 35 25 | 63 | S-13: Very dense, gray, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | 0.4 | 6 | | | | |
| | | | | | 38 51 | | | | | | | | |
| 73 | | | | | | | | | | | | | |
| 91 | S-14 | 44.0-46.0 | 24 | 12 | 26 28 | 48 | S-14: Dense, gray, fine SAND and SILT, wet (SM) | 1.6 | | | | | |
| 23 | | | | | 20 24 | | | | | | | | |
| 31 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |
| 36 | S-15 | 49.0-51.0 | 24 | 8 | 25 27 | 62 | S-15: Very dense, gray, fine to coarse SAND, little Silt, wet (SM) | 3.4 | | | | | |
| | | | | | 35 28 | | | | | | | | |
| 55 | S-16 | 54.0-56.0 | 24 | 9 | 24 31 | 64 | S-16: Very dense, gray, fine to coarse SAND and SILT, wet (SM) | 2.1 | | | | | |
| | | | | | 33 20 | | | | | | | | |
| 60 | S-17 | 59.0-61.0 | 24 | 16 | 19 13 | 30 | S-17: Dense, gray, fine SAND, trace Silt, wet (SW-SM) | 6.1 | | | | | |

REMARKS
6 - 5-inch casing driven to 39 feet bgs. Driller proceeded with 4-inch casing.

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Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



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HDR Engineering, Inc.
 National Grid LNG Storage & Dist. Facility
 121 Terminal Road
 Providence, Rhode Island

EXPLORATION NO.: PRV-4
 SHEET: 3 of 6
 PROJECT NO: 34588.00
 REVIEWED BY: Matt Page

Logged By: Alex Veitch
 Drilling Co.: Geologic Inc.
 Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
 Rig Model: CME-75
 Drilling Method:
 Drive & Wash

Boring Location: See Plan
 Ground Surface Elev. (ft.): 13.75
 Final Boring Depth (ft.): 151
 Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
 V. Datum: NAVD 88

Hammer Type: Automatic Hammer
 Hammer Weight (lb.): 140
 Hammer Fall (in.): 30
 Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
 3.5 / 3

Sampler Type: SS
 Sampler O.D. (in.): 2.0
 Sampler Length (in.): 24
 Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
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| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample No. | Depth (ft.) | Sample | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|------------|-------------|-----------|-----------|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | | | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | | | | 17 13 | | | | | | | |
| 65 | | S-18 | 64.0-66.0 | 24 | 16 | 19 16 20 16 | 36 | S-18: Dense, gray, fine SAND, trace Silt, wet (SW-SM) | 0.0 | | | | |
| 70 | | S-19 | 69.0-71.0 | 24 | 12 | 25 19 15 17 | 34 | S-19: Dense, gray, fine SAND, trace Silt, wet (SW-SM) | 0.0 | | | | |
| 75 | 43 | S-20 | 74.0-76.0 | 24 | 5 | 12 12 22 16 | 34 | S-20: Dense, gray, fine to coarse SAND, some Gravel, little Silt, wet (SM) | 0.0 | | | GLACIAL OUTWASH | |
| 80 | 17 | S-21 | 79.0-81.0 | 24 | 14 | 12 11 14 19 | 25 | S-21: Dense, gray, fine to medium SAND, trace Silt, wet (SW-SM) | 0.0 | | | | |
| 85 | 103 | S-22 | 84.0-86.0 | 24 | 3 | 16 13 14 8 | 27 | S-22: Medium dense, gray, fine to coarse SAND, some Gravel, trace Silt, wet (SW-SM) | 0.0 | 7 | | | |
| 90 | 89 | S-23 | 89.0-91.0 | 24 | 7 | 19 13 | 29 | S-23: Dense, gray, fine to medium SAND, trace Silt, wet | 0.0 | 8 | | | |

REMARKS
 7 - Gravel observed in spoon tip of sample S-22.
 8 - Sample S-23 contained approximately 6 inches of drill wash.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-4
SHEET: 4 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.75
Final Boring Depth (ft.): 151
Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|--|-----------|--------|-------------|---------------------|--------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| 56 | | | | | | 16 37 | | (SW-SM) | | | | | |
| 47 | | | | | | | | | | | | | |
| 117 | | | | | | | | | | | | | |
| 141 | | | | | | | | | | | | | |
| 95 | | S-24 | 94.0-96.0 | 24 | 14 | 26 23 29 25 | 52 | S-24: Very dense, gray, fine to coarse SAND, little Gravel, trace Silt, wet (SW-SM) | 0.0 | | | | |
| 386 | | | | | | | | | | | | | |
| 503 | | | | | | | | | | | | | |
| 601 | | | | | | | | | 0.0 | | | | |
| 100 | | S-25 | 99.0-101.0 | 24 | 14 | 31 28 34 24 | 62 | S-25: Very dense, gray, fine to coarse, SAND, little Gravel, trace Silt, wet (SW-SM) | | 9 | | GLACIAL OUTWASH | |
| 105 | | S-26 | 104.0-106.0 | 24 | 0 | 71 51 41 43 | 92 | S-26: NO RECOVERY | 0.0 | 10 | | | |
| 110 | | S-27 | 109.0-111.0 | 24 | 24 | 19 21 39 68 | 60 | S-27: Top 18": Gray, fine SAND, trace Silt, moist (SP-SM) Bottom 6": Gray, fine SAND, little Silt, wet (SM) | 0.0 | | 109 | | -95.3 |
| 115 | | S-28 | 114.0 | | | | | S-28: NOT OBTAINED | | 11 | | | GLACIAL TILL |
| 120 | | S-29 | 119.0- | 9 | 8 | 56 100 | R | S-29: Gray, fine to coarse GRAVEL, some Sand, trace Silt, wet | 0.0 | | | | |

REMARKS
9 - 4-inch casing driven to 99 feet bgs. Driller proceeded with 3-inch casing.
10 - Sample S-26 contained approximately 10 inches of drill wash.
11 - Approximately 4 feet of blowing sands encountered during sampling at 114 feet bgs. Driller added drill mud to the tub and flushed casing three times prior to obtaining sample S-28. Sample not indicative of actual conditions. Driller proceeded with 3-inch casing up to 119 feet bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-4
SHEET: 5 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.75
Final Boring Depth (ft.): 151
Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample No. | Sample | | | | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|------------|-------------|-----------|-----------|--------------------|-----------|--|-----------|--------|-------------|---------------------|-------------|
| | | | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | |
| | | | 119.8 | | | 73" | | (GW-GM) | | | | | |
| 125 | | S-30 | 124.0-125.9 | 23 | 18 | 35 28 50 100/5" | 78 | S-30: Very dense, gray, fine to coarse SAND, little Silt, moist (SM) | 0.0 | 12 | | | |
| 130 | | S-31 | 129.0-131.0 | 24 | 5 | 28 23 26 40 | 49 | S-31: Dense, gray, fine SAND, little Silt, trace Gravel, moist (SM) | 0.0 | | | | |
| 135 | | S-32 | 134.0 | | | | | S-32: NOT OBTAINED | | 13 | | GLACIAL TILL | |
| 140 | | S-33 | 139.0-141.0 | 24 | 23 | 10 68 68 78 | 136 | S-33: Very dense, gray, fine SAND and SILT, moist (SM) | 0.0 | | | | |
| 145 | 92 | S-34 | 144.0-146.0 | 24 | 23 | 25 33 48 56 | 81 | S-34: Hard, gray, Clayey SILT, trace fine sand, wet (ML) | 0.0 | | | | |
| 150 | | S-35 | 149.0- | 24 | 13 | 17 15 | 40 | S-35: Hard, gray, SILT, trace fine Sand, wet (ML) | 0.0 | | | | |

REMARKS
12 - Sample S-30 contained approximately 6 inches of drill was. Approximately 25 feet of blowing sands observed.
13 - Casing dropped to approximately 138 feet bgs during flushing of blowing sands within casing. Driller proceeded to obtain sample at 139 feet bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-4
SHEET: 6 of 6
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 13.75
Final Boring Depth (ft.): 151
Date Start - Finish: 6/3/2019 - 6/3/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 5.5 / 5; 4.5 / 4;
3.5 / 3

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

| Groundwater Depth (ft.) | | | | |
|-------------------------|-------|------------|-------|--------|
| Date | Time | Stab. Time | Water | Casing |
| 7/16/19 | 07:45 | 1 Day | 0 | 34 |
| 7/17/19 | 07:45 | 1 Day | 1.3 | 94 |

| Depth (ft) | Casing Blows/ (Core Rate) | No. | Sample | | | | Blows (per 6 in.) | SPT Value | Stratum Description (Modified Burmister Classification) | PID (ppm) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|-----|-------------|-----------|-----------|-------------------|-------------------|-----------|---|-----------|--------|-------------|---------------------|-------------|
| | | | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | | | | | | | | |
| | | | 151.0 | | | 25 | 47 | | | | | 151 | GLACIAL TILL | -137.3 |
| 155 | | | | | | | | | | | | | | |
| 160 | | | | | | | | | | | | | | |
| 165 | | | | | | | | | | | | | | |
| 170 | | | | | | | | | | | | | | |
| 175 | | | | | | | | | | | | | | |
| 180 | | | | | | | | | | | | | | |

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-4

TEST BORING W/ PID - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 8/23/19 08:17 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TEST BORING LOG



GZA
GeoEnvironmental, Inc.
Engineers and Scientists

HDR Engineering, Inc.
National Grid LNG Storage & Dist. Facility
121 Terminal Road
Providence, Rhode Island

EXPLORATION NO.: PRV-5
SHEET: 1 of 1
PROJECT NO: 34588.00
REVIEWED BY: Matt Page

Logged By: Alex Veitch
Drilling Co.: Geologic Inc.
Foreman: P. Fisher/D. Sheldon

Type of Rig: ATV
Rig Model: CME-75
Drilling Method:
Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 7.5
Final Boring Depth (ft.): 28
Date Start - Finish: 7/11/2019 - 7/11/2019

H. Datum: NAD 83
V. Datum: NAVD 88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4.5 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

| Date | Time | Stab. Time | Water | Casing |
|---------|-------|------------|-------|--------|
| 6/3/19 | 11:00 | 5 Minutes | 5.3 | N/A |
| 7/11/19 | 12:45 | N/A | 5.8 | 26 |

| Depth (ft) | Casing Blows/ (Core Rate) | Sample | | | | | | Stratum Description (Modified Burmister Classification) | Remark | Depth (ft.) | Stratum Description | Elev. (ft.) |
|------------|---------------------------|--------|-------------|-----------|-----------|-------------------|-----------|---|--------|-------------|---------------------|-------------|
| | | No. | Depth (ft.) | Pen. (in) | Rec. (in) | Blows (per 6 in.) | SPT Value | | | | | |
| | | S-1 | 2.0 | | | | | S-1: Brown, fine to coarse SAND, little Silt, little fine Gravel, dry (SM) | 1 | | | |
| | | S-2 | 3.5 | | | | | S-2: Brown, fine to coarse SAND, trace Silt, trace fine Gravel, dry | 2 | | | |
| 5 | 60 | S-3 | 5.0 | | | | | S-3: Brown, fine to coarse SAND, little Silt, trace fine Gravel, wet (SM) | | | | |
| | 57 | S-4 | 6.0-8.0 | 24 | 8 | 7 8 | 18 | S-4: Medium dense, brown, fine to coarse SAND, some fine Gravel, trace Silt, wet (SW-SM) | | | | |
| | 49 | | | | | 10 10 | | | | | | |
| | 36 | S-5 | 8.0-10.0 | 24 | 18 | 15 7 | 18 | S-5: Medium dense, brown, fine to coarse SAND, little Gravel, little Silt, slight petroleum-like odor, wet (SM) | | | | |
| 10 | 2 | S-6 | 10.0-12.0 | 24 | 9 | 6 15 | 31 | S-6: Dense, brown, fine to coarse GRAVEL and fine to coarse SAND, trace Silt, wet (GW-GM) | | | FILL | |
| | 2 | | | | | 16 24 | | | | | | |
| | 45 | S-7 | 12.0-14.0 | 24 | 14 | 13 15 | 30 | S-7: Dense, brown, fine to coarse SAND, some Silt, little Gravel, wet (SM) | | | | |
| | 108 | | | | | 15 13 | | | | | | |
| 15 | 36 | S-8 | 14.0-16.0 | 24 | 5 | 45 23 | 40 | S-8: Dense, brown, GRAVEL, some Silt, some fine to coarse Sand, wet (GM) | | | | |
| | 86 | | | | | 17 12 | | | | | | |
| | 113 | S-9 | 16.0-18.0 | 24 | 12 | 12 11 | 26 | S-9: Medium dense, brown, fine to coarse SAND, some Silt, little Gravel, wet (SM) | | | | |
| | 102 | | | | | 15 36 | | | | | | |
| | 98 | S-10 | 18.0-20.0 | 24 | 9 | 16 12 | 28 | S-10: Medium dense, brown, SILT, some fine to coarse Sand, trace fine Gravel (wet) | | | | |
| 20 | 106 | | | | | 16 10 | | | | | | |
| | 30 | S-11 | 20.0-22.0 | 24 | 7 | 12 12 | 25 | S-11: Medium dense, brown, fine to coarse SAND and GRAVEL, little Silt, wet (SM) | | | | |
| | 76 | | | | | 13 18 | | | | | | |
| | 105 | S-12 | 22.0-24.0 | 24 | 15 | 59 101 | >100 | S-12: Top 11": Gray/brown, GRAVEL, some fine to coarse Sand, little Silt, wet (GM) | 22 | | -14.5 | |
| | 113 | | | | | 61 62 | | Bottom 4": GRAVEL (GW) | | | | |
| 25 | | S-13 | 24.0-26.0 | 24 | 7 | 12 30 | 48 | S-13: Dense, brown, GRAVEL and fine to coarse SAND, little Silt, wet (GM) | | | GLACIAL OUTWASH | |
| | | | | | | 18 12 | | | | | | |
| | | S-14 | 26.0-28.0 | 24 | 9 | 20 25 | 47 | S-14: Dense, brown, GRAVEL, some fine to coarse Sand, some Silt, wet (GM) | | | | |
| | | | | | | 22 20 | | | 28 | | -20.5 | |
| | | | | | | | | End of exploration at 28 feet | | | | |
| 30 | | | | | | | | | | | | |

REMARKS
1 - Boring location was cleared for utilities using an airknife and soil vacuum excavation to 5.5 feet bgs on 6/3/19.
2 - Headspace of samples was field screened with a Mini Rae 3000 PID with a 10.6 eV lamp. Results are in PPM.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.:
PRV-5

GZA TEMPLATE TEST BORING - GZA PLOG DATA TEMPLATE 03-20-18.GDT - 9/30/19 11:45 - J:\GINT PROJECT DATABASES\34588-NGRID LNG STORAGE FACILITY.GPJ

TABLE X-1 - GROUNDWATER ANALYTICAL DATA

DEEPER BORINGS DATA GAP

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objective | RIDEM GB Groundwater UCL | Well ID: Date: | GZ-301D 06/18/2014 | GZ-301D 10/15/2015 | GZ-301D 5/20/2016 | GZ-301D 5/31/2017 | GZ-301D 3/21/2018 | GZ-301D 11/19/2019 | GZ-301D 11/23/2020 | GZ-301D 11/18/2021 | GZ-301D 11/22/2022 | GZ-302D 06/18/2014 |
|--|--------------------------------------|-----------------------------|-------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | mg/L | ND | 0.0002 | 0.0002 | ND | ND | ND | ND | ND | ND | ND |
| Carbon Disulfide | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | mg/L | ND | 0.0272 | 0.0003 | 0.0016 | 0.0012 | ND | ND | ND | ND | 0.0057 |
| Ethylbenzene | 1.6 | 16 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methyl tert-Butyl Ether | 5 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | mg/L | ND | 0.0039 | 0.0039 | ND | ND | ND | ND | ND | ND | 0.0465 |
| Toluene | 1.7 | 21 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | mg/L | ND | 0.0004 | 0.0004 | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | mg/L | ND | 0.012 | ND | ND | ND | ND | ND | ND | ND | 0.0197 |
| Vinyl Chloride | 0.002 | NE | mg/L | ND | 0.0038 | 0.0007 | 0.0019 | 0.0014 | ND | ND | ND | ND | ND |
| Xylene O | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylene P,M | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

TABLE X-1 - GROUNDWATER ANALYTICAL DATA

DEEPER BORINGS DATA GAP

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objective | RIDEM GB Groundwater UCL | GZ-303D 06/18/2014 | GZ-304D 06/18/2014 | GZ-304D 10/15/2015 | GZ-304D 5/20/2016 | GZ-304D 5/31/2017 | GZ-304D 3/21/2018 | GZ-304D 11/19/2019 | GZ-304D 11/23/2020 | GZ-304D 11/18/2021 | GZ-304D 11/22/2022 | GZ-309D 06/17/2014 |
|--|--------------------------------------|-----------------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | ND | ND | 0.0004 | 0.0003 | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | ND | 0.0053 | 0.0023 | 0.002 | ND | ND | 0.0016 | 0.002 | 0.0013 | 0.0012 | ND |
| Carbon Disulfide | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | 0.004 | 0.016 | 0.0168 | 0.0148 | ND | ND | 0.0016 | 0.0024 | 0.0016 | 0.0078 | ND |
| Ethylbenzene | 1.6 | 16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methyl tert-Butyl Ether | 5 | NE | ND | ND | 0.0005 | 0.0006 | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | ND | 0.046 | ND | 0.0005 | ND | 0.0023 | 0.0232 | ND | 0.0062 | ND | ND |
| n-Butylbenzene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| tert-Butylbenzene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | 0.0277 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | 0.0125 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | ND | ND | 0.0002 | 0.0002 | ND | ND | ND | ND | ND | ND | ND |
| Xylene O | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylene P,M | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

TABLE X-1 - GROUNDWATER ANALYTICAL DATA

DEEPER BORINGS DATA GAP

642 Allens Avenue

Providence, Rhode Island

| | RIDEM GB Groundwater Objective | RIDEM GB Groundwater UCL | GZ-309D 10/15/2015 | GZ-309D 5/20/2016 | GZ-309D 5/31/2017 | GZ-309D 3/21/2018 | GZ-309D 11/20/2019 | GZ-309D 11/23/2020 | GZ-309D 11/18/2021 | GZ-309D 11/22/2022 | GZ-311D 06/18/2014 | GZ-312D 06/18/2014 | GZ-313D 06/18/2014 |
|--|--------------------------------------|-----------------------------|-----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | ND | 0.0002 | ND | ND | ND | ND | ND | ND | 0.0215 | 0.0018 | 0.0565 |
| 1,3,5-Trimethylbenzene | NE | NE | ND | 0.0001 | ND | ND | ND | ND | ND | ND | 0.0082 | ND | 0.0112 |
| 4-Isopropyltoluene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | 0.0012 | ND | 0.0024 |
| Acetone | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | 0.049 | ND | ND |
| Benzene | 0.14 | 18 | ND | ND | ND | ND | ND | ND | ND | ND | 0.0216 | 0.0017 | 0.0433 |
| Carbon Disulfide | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | 0.059 | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | ND | ND | ND | ND | ND | ND | ND | ND | 0.0044 | ND | 0.0147 |
| Isopropylbenzene | NE | NE | ND | 0.0112 | 0.0071 | ND | ND | ND | ND | ND | 0.0011 | ND | 0.0111 |
| Methyl tert-Butyl Ether | 5 | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.0119 | 0.003 |
| Naphthalene | 2.67 | NE | ND | 0.0009 | 0.0022 | ND | ND | ND | ND | ND | 1.16 | 0.0107 | 0.284 |
| n-Butylbenzene | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | ND | 0.0028 | 0.0019 | ND | ND | ND | ND | ND | ND | ND | 0.0035 |
| sec-Butylbenzene | NE | NE | ND | 0.0033 | 0.0022 | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | ND | ND | ND | ND | ND | ND | ND | ND | 0.0044 | ND | ND |
| tert-Butylbenzene | NE | NE | ND | 0.0007 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | ND | 0.0002 | ND | ND | ND | ND | ND | ND | 0.0068 | ND | 0.0018 |
| trans-1,2-Dichloroethene | 2.8 | 79 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylene O | NE | NE | ND | 0.0008 | ND | ND | ND | ND | ND | ND | 0.0083 | ND | 0.0153 |
| Xylene P,M | NE | NE | ND | 0.0004 | ND | ND | ND | ND | ND | ND | 0.0121 | ND | 0.0065 |
| Xylenes (Total) | NE | NE | ND | 0.0012 | ND | ND | ND | ND | ND | ND | 0.0204 | ND | 0.0218 |

TABLE X-1 - GROUNDWATER ANALYTICAL DATA

DEEPER BORINGS DATA GAP

642 Allens Avenue

Providence, Rhode Island

| | RIDEM GB Groundwater Objective | RIDEM GB Groundwater UCL | GZ-314D 06/19/2014 | GZ-314D 10/16/2015 | GZ-314D 5/19/2016 | GZ-315D 06/19/2014 | GZ-318D 06/20/2014 | GZ-319D 06/19/2014 | GZ-319D 5/30/2017 | GZ-319D 3/21/2018 | GZ-319D 11/19/2019 | GZ-319D 11/23/2020 | GZ-319D 11/17/2021 |
|--|--------------------------------------|-----------------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Volatile Organic Compounds (VOCs) | | | | | | | | | | | | | |
| 1,1-Dichloroethane | NE | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | 0.183 | 0.0825 | 0.12 | 0.2 | 0.104 | 0.0032 | ND | ND | ND | ND | ND |
| 1,3,5-Trimethylbenzene | NE | NE | 0.0379 | 0.0218 | 0.0185 | 0.056 | 0.0351 | ND | ND | ND | ND | ND | ND |
| 4-Isopropyltoluene | NE | NE | 0.0083 | 0.0038 | 0.0035 | 0.0117 | 0.0011 | ND | ND | ND | ND | ND | ND |
| Acetone | NE | NE | ND | 0.0028 | 0.0028 | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | 2.01 | 1.79 | 1.22 | 0.698 | 1.82 | 0.0092 | 0.0086 | 0.0056 | 0.053 | 0.0221 | 0.0114 |
| Carbon Disulfide | NE | NE | ND | 0.0023 | 0.0023 | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | 0.642 | 0.518 | 0.438 | 0.596 | 0.316 | 0.0047 | ND | ND | ND | ND | ND |
| Isopropylbenzene | NE | NE | 0.0448 | 0.0296 | 0.0253 | 0.055 | 0.0144 | 0.001 | 0.0015 | 0.0017 | 0.0017 | 0.0016 | 0.0013 |
| Methyl tert-Butyl Ether | 5 | NE | ND | ND | ND | ND | ND | 0.0017 | ND | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | 3.43 | 2.99 | 2.52 | 3.89 | 2.88 | 0.0999 | ND | 0.0013 | ND | ND | ND |
| n-Butylbenzene | NE | NE | ND | ND | 0.0027 | ND | ND | ND | ND | ND | ND | ND | ND |
| n-Propylbenzene | NE | NE | 0.018 | 0.0092 | 0.0082 | 0.0164 | 0.0027 | ND | ND | ND | ND | ND | ND |
| sec-Butylbenzene | NE | NE | 0.002 | 0.0011 | 0.0008 | 0.0016 | ND | ND | ND | ND | ND | ND | ND |
| Styrene | 2.2 | 50 | ND | 0.0005 | ND | ND | 0.0044 | 0.0013 | ND | ND | 0.0017 | 0.0021 | 0.0011 |
| tert-Butylbenzene | NE | NE | ND | 0.0003 | 0.0003 | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | 0.0147 | 0.0145 | 0.0086 | 0.0184 | 0.156 | 0.0013 | ND | ND | ND | ND | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylene O | NE | NE | 0.144 | 0.082 | 0.0964 | 0.288 | 0.184 | 0.0032 | ND | ND | ND | ND | ND |
| Xylene P,M | NE | NE | 0.0407 | 0.0347 | 0.0208 | 0.0867 | 0.208 | 0.003 | ND | ND | ND | ND | ND |
| Xylenes (Total) | NE | NE | 0.185 | 0.117 | 0.117 | 0.375 | 0.392 | 0.0062 | ND | ND | ND | ND | ND |

TABLE X-1 - GROUNDWATER ANALYTICAL DATA

DEEPER BORINGS DATA GAP

642 Allens Avenue
Providence, Rhode Island

| | RIDEM GB Groundwater Objective | RIDEM GB Groundwater UCL | GZ-319D 11/22/2022 | GZ-320D 06/17/2014 | GZ-500D 11/16/2021 | GZ-500D 11/22/2022 |
|--|--------------------------------------|-----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Volatile Organic Compounds (VOCs) | | | | | | |
| 1,1-Dichloroethane | NE | NE | ND | ND | ND | ND |
| 1,2,4-Trimethylbenzene | NE | NE | ND | ND | 0.0092 | 0.0086 |
| 1,3,5-Trimethylbenzene | NE | NE | ND | ND | 0.003 | 0.0026 |
| 4-Isopropyltoluene | NE | NE | ND | ND | 0.0009 | ND |
| Acetone | NE | NE | ND | ND | ND | ND |
| Benzene | 0.14 | 18 | 0.0058 | 0.0015 | 0.007 | 0.0079 |
| Carbon Disulfide | NE | NE | ND | ND | 0.003 | ND |
| cis-1,2-Dichloroethene | 2.4 | 69 | ND | ND | ND | ND |
| Ethylbenzene | 1.6 | 16 | ND | ND | 0.0027 | 0.002 |
| Isopropylbenzene | NE | NE | 0.0015 | ND | 0.0023 | 0.0017 |
| Methyl tert-Butyl Ether | 5 | NE | ND | ND | ND | ND |
| Naphthalene | 2.67 | NE | ND | 0.0011 | 0.0785 | 0.201 |
| n-Butylbenzene | NE | NE | ND | ND | 0.0006 | ND |
| n-Propylbenzene | NE | NE | ND | ND | 0.0008 | ND |
| sec-Butylbenzene | NE | NE | ND | ND | 0.0002 | ND |
| Styrene | 2.2 | 50 | 0.0017 | ND | 0.0002 | ND |
| tert-Butylbenzene | NE | NE | ND | ND | ND | ND |
| Tetrachloroethene | 0.15 | NE | ND | ND | ND | ND |
| Toluene | 1.7 | 21 | ND | ND | 0.0007 | ND |
| trans-1,2-Dichloroethene | 2.8 | 79 | ND | ND | ND | ND |
| Trichloroethene | 0.54 | 87 | ND | ND | ND | ND |
| Vinyl Chloride | 0.002 | NE | ND | ND | ND | ND |
| Xylene O | NE | NE | ND | ND | 0.0036 | 0.0028 |
| Xylene P,M | NE | NE | ND | ND | 0.0024 | ND |
| Xylenes (Total) | NE | NE | ND | ND | 0.00605 | 0.00283 |

**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | June 2014 | | | | | | | July 2, 2014 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 10.87 | - | 29.7 | 6.46 | NP | NP | 6.46 | - | 10.05 | - | 29.6 | 7.28 | NP | NP | 7.28 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.35 | - | 29.5 | 7.24 | NP | NP | 7.24 | - | 9.48 | - | 29.44 | 7.11 | NP | NP | 7.11 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.18 | - | 29.7 | 6.95 | NP | NP | 6.95 | - | 6.3 | - | 29.67 | 6.83 | NP | NP | 6.83 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.55 | - | 29.7 | 5.40 | NP | NP | 5.40 | - | 6.45 | - | 29.58 | 5.50 | NP | NP | 5.50 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.44 | - | 29.9 | 5.39 | NP | NP | 5.39 | - | 4.11 | - | 29.9 | 5.72 | NP | NP | 5.72 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | - | 7.07 | - | 32.7 | 5.75 | NP | NP | 5.75 | - | 7.59 | - | 32.68 | 5.23 | NP | NP | 5.23 |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | - | 5.07 | - | 32.75 | 5.72 | NP | NP | 5.72 | - | 6.25 | - | 32.6 | 4.54 | NP | NP | 4.54 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 8.17 | - | 38.2 | 3.47 | NP | NP | 3.47 | - | 8.57 | - | 38.11 | 3.07 | NP | NP | 3.07 |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | - | 9.12 | - | 36.5 | 4.36 | NP | NP | 4.36 | - | 9.2 | - | 36.42 | 4.28 | NP | NP | 4.28 |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | - | 11.8 | - | 33.1 | 7.14 | NP | NP | 7.14 | - | 12.06 | - | 33.15 | 6.88 | NP | NP | 6.88 |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 11.83 | - | 37.00 | 2.28 | NP | NP | 2.28 | - | 12.18 | - | 37.00 | 1.93 | NP | NP | 1.93 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.13 | - | 33.05 | 1.80 | NP | NP | 1.80 | - | 11.26 | - | 32.90 | 1.67 | NP | NP | 1.67 |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.86 | - | 32.23 | 5.04 | NP | NP | 5.04 | - | 9.91 | - | 32.20 | 4.99 | NP | NP | 4.99 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to City of Providence Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | July 23, 2014 | | | | | | | October 2014 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 10.12 | - | 29.6 | 7.21 | NP | NP | 7.21 | - | 10.49 | - | 29.72 | 6.84 | NP | NP | 6.84 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.57 | - | 29.41 | 7.02 | NP | NP | 7.02 | - | 9.9 | - | 29.45 | 6.69 | NP | NP | 6.69 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.38 | - | 29.66 | 6.75 | NP | NP | 6.75 | - | 9.93 | - | 15.05 | 3.20 | NP | NP | 3.20 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.45 | - | 29.57 | 5.50 | NP | NP | 5.50 | - | 7.00 | - | 29.62 | 4.95 | NP | NP | 4.95 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.02 | - | 29.9 | 5.81 | NP | NP | 5.81 | - | 4.53 | - | 29.9 | 5.30 | NP | NP | 5.30 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | - | 7.58 | - | 32.56 | 5.24 | NP | NP | 5.24 | - | 7.47 | - | 32.55 | 5.35 | NP | NP | 5.35 |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | - | 6.6 | - | 32.6 | 4.19 | NP | NP | 4.19 | - | 6.54 | - | 32.7 | 4.25 | NP | NP | 4.25 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 10.16 | - | 38.05 | 1.48 | NP | NP | 1.48 | - | 8.71 | - | 38.2 | 2.93 | NP | NP | 2.93 |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | - | 9.64 | - | 36.4 | 3.84 | NP | NP | 3.84 | - | 9.53 | - | 36.35 | 3.95 | NP | NP | 3.95 |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | - | 12.38 | - | 33.7 | 6.56 | NP | NP | 6.56 | - | 12.51 | - | 33.15 | 6.43 | NP | NP | 6.43 |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 12.48 | - | 36.95 | 1.63 | NP | NP | 1.63 | - | 12.43 | - | 36.93 | 1.68 | NP | NP | 1.68 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.36 | - | 32.93 | 1.57 | NP | NP | 1.57 | - | 11.39 | - | 33.07 | 1.54 | NP | NP | 1.54 |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 10.15 | - | 32.25 | 4.75 | NP | NP | 4.75 | - | 10.38 | - | 32.30 | 4.52 | NP | NP | 4.52 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to City of Providence Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | April 2015 | | | | | | | October 2015 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|--|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation (feet) |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.61 | - | 29.66 | 7.72 | NP | NP | 7.72 | - | 10.84 | - | 29.64 | 6.49 | NP | NP | 6.49 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.35 | - | 29.38 | 7.24 | NP | NP | 7.24 | - | 10.19 | - | 29.42 | 6.40 | NP | NP | 6.40 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.16 | - | 29.65 | 6.97 | NP | NP | 6.97 | - | 7.9 | - | 29.67 | 5.23 | NP | NP | 5.23 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.18 | - | 29.76 | 5.77 | NP | NP | 5.77 | - | 6.45 | - | 29.6 | 5.50 | NP | NP | 5.50 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.59 | - | 29.9 | 6.24 | NP | NP | 6.24 | - | 4.58 | - | 30 | 5.25 | NP | NP | 5.25 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | - | 6.52 | - | 32.58 | 6.30 | NP | NP | 6.30 | - | 7.99 | - | 32.7 | 4.83 | NP | NP | 4.83 |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | - | 6.19 | - | 32.79 | 4.60 | NP | NP | 4.60 | - | 6.68 | - | 32.63 | 4.11 | NP | NP | 4.11 |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 8.83 | - | 38.15 | 2.81 | NP | NP | 2.81 | - | 9.33 | - | 38.15 | 2.31 | NP | NP | 2.31 |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | - | 9.09 | - | 36.5 | 4.39 | NP | NP | 4.39 | - | 9.64 | - | 36.42 | 3.84 | NP | NP | 3.84 |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | - | 11.34 | - | 33.13 | 7.60 | NP | NP | 7.60 | - | 12.8 | - | 33.3 | 6.14 | NP | NP | 6.14 |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 12.2 | - | 37.00 | 1.91 | NP | NP | 1.91 | - | 12.47 | - | 37.00 | 1.64 | NP | NP | 1.64 |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.46 | - | 32.90 | 1.47 | NP | NP | 1.47 | - | 11.32 | - | 32.93 | 1.61 | NP | NP | 1.61 |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.58 | - | 32.20 | 5.32 | NP | NP | 5.32 | - | 10.32 | - | 32.27 | 4.58 | NP | NP | 4.58 |

Notes

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- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | May 2016 | | | | | | | October 2016 | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 10.22 | - | 29.6 | 7.11 | NP | NP | 7.11 | - | 10.55 | - | 29.8 | 6.78 | NP | NP | 6.78 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.83 | - | 29.38 | 6.76 | NP | NP | 6.76 | - | 10 | - | 29.48 | 6.59 | NP | NP | 6.59 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.49 | - | 29.62 | 6.64 | NP | NP | 6.64 | - | 6.72 | - | 29.74 | 6.41 | NP | NP | 6.41 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.01 | - | 29.5 | 5.94 | NP | NP | 5.94 | - | 6.52 | - | 29.57 | 5.43 | NP | NP | 5.43 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.05 | - | 29.8 | 5.78 | NP | NP | 5.78 | Unable to open | | | | | | | |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | - | 7.45 | - | 32.6 | 5.37 | NP | NP | 5.37 | Decommissioned June 2016 | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | - | 6.75 | - | 32.25 | 4.04 | NP | NP | 4.04 | Decommissioned June 2016 | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | - | 9.65 | - | 38.1 | 1.99 | NP | NP | 1.99 | Decommissioned June 2016 | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | - | 9.46 | - | 36.28 | 4.02 | NP | NP | 4.02 | Decommissioned June 2016 | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | - | 12.17 | - | 33.07 | 6.77 | NP | NP | 6.77 | Decommissioned June 2016 | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20-30 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | - | 11.92 | - | 36.85 | 2.19 | NP | NP | 2.19 | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | - | 11.45 | - | 32.8 | 1.48 | NP | NP | 1.48 | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 10.05 | - | 32.15 | 4.85 | NP | NP | 4.85 | - | 10.4 | - | 32.92 | 4.50 | NP | NP | 4.50 |

Notes

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- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
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**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | May 2017 | | | | | | | | March 2018 | | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.21 | - | 29.64 | 8.12 | NP | NP | 8.12 | - | 8.99 | - | 29.80 | 8.34 | NP | NP | 8.34 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.06 | - | 29.32 | 7.53 | NP | NP | 7.53 | - | 8.84 | - | 29.79 | 7.75 | NP | NP | 7.75 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 5.91 | - | 29.71 | 7.22 | NP | NP | 7.22 | - | 5.60 | - | 29.95 | 7.53 | NP | NP | 7.53 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 7.60 | - | 29.50 | 4.35 | NP | NP | 4.35 | - | 5.35 | - | 29.80 | 6.60 | NP | NP | 6.60 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.64 | - | 11.25 | 6.19 | NP | NP | 6.19 | - | 3.21 | - | 30 | 6.62 | NP | NP | 6.62 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.25 | - | 32.40 | 5.65 | NP | NP | 5.65 | - | 9.69 | - | 32.40 | 5.21 | NP | NP | 5.21 |

Notes

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- Blanks indicate no measurement collected on that particular day.
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**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | November 2018 | | | | | | | | June 2019 | | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 8.19 | - | 29.59 | 9.14 | NP | NP | 9.14 | - | 9.28 | - | 29.50 | 8.05 | NP | NP | 8.05 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 7.95 | - | 29.37 | 8.64 | NP | NP | 8.64 | - | 8.79 | - | 29.45 | 7.80 | NP | NP | 7.80 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 4.88 | - | 29.62 | 8.25 | NP | NP | 8.25 | - | 5.63 | - | 29.64 | 7.50 | NP | NP | 7.50 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 4.65 | - | 29.52 | 7.30 | NP | NP | 7.30 | - | 5.00 | - | 29.67 | 6.95 | NP | NP | 6.95 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 2.88 | - | 29.87 | 6.95 | NP | NP | 6.95 | - | 3.32 | - | 30 | 6.51 | NP | NP | 6.51 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 8.71 | - | 32.29 | 6.19 | NP | NP | 6.19 | - | 9.08 | - | 32.17 | 5.82 | NP | NP | 5.82 |

Notes

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- Blanks indicate no measurement collected on that particular day.
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**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | November 2019 | | | | | | | June 2020 | | | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.93 | - | 29.74 | 7.40 | NP | NP | 7.40 | - | 9.82 | - | 29.6 | 7.51 | NP | NP | 7.51 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.47 | - | 29.65 | 7.12 | NP | NP | 7.12 | - | 9.33 | - | 29.61 | 7.26 | NP | NP | 7.26 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.57 | - | 30.17 | 6.56 | NP | NP | 6.56 | - | 6.4 | - | 29.93 | 6.73 | NP | NP | 6.73 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.78 | - | 29.84 | 6.17 | NP | NP | 6.17 | - | 5.58 | - | 29.54 | 6.37 | NP | NP | 6.37 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.65 | - | 30.25 | 6.18 | NP | NP | 6.18 | - | 3.45 | - | 30.01 | 6.38 | NP | NP | 6.38 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.84 | - | 32.55 | 5.06 | NP | NP | 5.06 | - | 9.64 | - | 32.46 | 5.26 | NP | NP | 5.26 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
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- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | November 2020 | | | | | | | | June 2021 | | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.95 | - | 29.65 | 7.38 | NP | NP | 7.38 | - | 9.76 | - | 29.37 | 7.57 | NP | NP | 7.57 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.43 | - | 29.3 | 7.16 | NP | NP | 7.16 | - | 9.32 | - | 29.35 | 7.27 | NP | NP | 7.27 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.36 | - | 30.3 | 6.77 | NP | NP | 6.77 | - | 6.94 | - | 30.08 | 6.19 | NP | NP | 6.19 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.71 | - | 29.6 | 6.24 | NP | NP | 6.24 | - | 5.75 | - | 29.6 | 6.2 | NP | NP | 6.2 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.85 | - | 30.1 | 5.98 | NP | NP | 5.98 | - | 3.4 | - | 30.14 | 6.43 | NP | NP | 6.43 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.9 | - | 32.69 | 5.00 | NP | NP | 5.00 | - | 9.55 | - | 32.31 | 5.35 | NP | NP | 5.35 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to City of Providence Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | November 2021 | | | | | | | June 2022 | | | | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.44 | - | 29.37 | 7.89 | NP | NP | 7.89 | - | 9.75 | - | 29.25 | 6.92 | NP | NP | 6.92 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 8.92 | - | 29.36 | 7.67 | NP | NP | 7.67 | - | 9.1 | - | 29.25 | 7.49 | NP | NP | 7.49 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.07 | - | 29.64 | 7.06 | NP | NP | 7.06 | - | 6.1 | - | 29.95 | 7.03 | NP | NP | 7.03 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 5.11 | - | 29.62 | 6.84 | NP | NP | 6.84 | - | 5.65 | - | 29.6 | 6.3 | NP | NP | 6.3 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 3.8 | - | 30.09 | 6.03 | NP | NP | 6.03 | - | 3.55 | - | 29.8 | 6.28 | NP | NP | 6.28 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20 - 30 | NP | NP | - | 11.72 | - | 32.86 | 7.77 | NP | NP | 7.77 | - | 12.15 | - | 32.8 | 7.34 | NP | NP | 7.34 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | Decommissioned June 2016 | | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.92 | - | 32.42 | 4.98 | NP | NP | 4.98 | - | 9.55 | - | 32.25 | 5.35 | NP | NP | 5.35 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
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- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to City of Providence Datum
- NP - Indicates No Product observed.
- NS - Not Surveyed
- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

**TABLE X-2 - GROUNDWATER AND NAPL GAUGING
DEEPER BORINGS DATA GAP**

642 Allens Avenue
Providence, Rhode Island

| Site Area | Well ID | Surveyed Elevations | | | Well Installation Details | | | | | Range of LNAPL Observed (feet) | Range of DNAPL Observed (feet) | November 2022 | | | | | | | |
|-----------|---------|--------------------------------|-----------------------------|------------------------|---------------------------|---------------------|----------------------|--------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------|---------------------|---------------------|-----------------------|---------------------|------------------------|------------------------|---------------------------------|
| | | Top of Casing Elevation (Feet) | Top of PVC Elevation (Feet) | Grade Elevation (Feet) | Type of Well | Well Depth Modifier | Date of Installation | Measured Well Depth (feet bgs) | Screened Interval (feet bgs) | | | Depth to LNAPL (ft) | Depth to Water (ft) | Depth to DNAPL (ft) | Total Well Depth (ft) | GW Elevation (feet) | LNAPL Thickness (feet) | DNAPL Thickness (feet) | Corrected Groundwater Elevation |
| CNG | GZ-301D | 17.74 | 17.33 | 17.74 | Roadbox | Deep | 5/30/2014 | 30.11 | 20 - 30 | NP | NP | - | 9.7 | - | 29.35 | 7.63 | NP | NP | 7.63 |
| CNG | GZ-302D | 16.97 | 16.59 | 16.97 | Roadbox | Deep | 5/30/2014 | 29.88 | 20 - 30 | NP | NP | - | 9.18 | - | 29.4 | 7.41 | NP | NP | 7.41 |
| NG | GZ-303D | 13.75 | 13.13 | 13.75 | Roadbox | Deep | 6/3/2014 | 30.32 | 20 - 30 | NP | NP | - | 6.22 | - | 29.93 | 6.91 | NP | NP | 6.91 |
| NG | GZ-304D | 12.41 | 11.95 | 12.41 | Roadbox | Deep | 5/24/2014 | 30.16 | 20 - 30 | NP | NP | - | 6.37 | - | 29.51 | 5.58 | NP | NP | 5.58 |
| NG | GZ-309D | 10.51 | 9.83 | 10.51 | Roadbox | Deep | 5/20/2014 | 30.58 | 20 - 30 | NP | NP | - | 4.08 | - | 29.88 | 5.75 | NP | NP | 5.75 |
| NG | GZ-311D | 13.04 | 12.82 | 10.03 | Standpipe | Deep | 5/21/2014 | 29.91 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | |
| NG | GZ-312D | 10.95 | 10.79 | 8.55 | Standpipe | Deep | 5/23/2014 | 30.51 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | |
| NG | GZ-313D | 11.79 | 11.64 | 9.78 | Standpipe | Deep | 5/27/2014 | 36.34 | 26 - 36 | NP | NP | Decommissioned June 2016 | | | | | | | |
| NG | GZ-318D | 13.59 | 13.48 | 11.13 | Standpipe | Deep | 6/2/2014 | 34.15 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | |
| NG | GZ-320D | 19.25 | 18.94 | 16.03 | Standpipe | Deep | 6/5/2014 | 30.19 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | |
| NG | GZ-500D | 19.64 | 19.49 | 16.80 | Standpipe | Deep | 9/15/2021 | 33.06 | 20-30 | NP | NP | - | 12.12 | - | 32.84 | 7.37 | NP | NP | 7.37 |
| LNG | GZ-314D | 14.24 | 14.11 | 11.22 | Standpipe | Deep | 6/3/2014 | 34.11 | 24 - 34 | NP | NP | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-315D | 13.06 | 12.93 | 10.17 | Standpipe | Deep | 6/4/2014 | 30.29 | 20 - 30 | NP | NP | Decommissioned June 2016 | | | | | | | |
| LNG | GZ-319D | 15.50 | 14.90 | 13.19 | Standpipe | Deep | 6/2/2014 | 30.52 | 20 - 30 | NP | NP | - | 9.39 | - | 32.27 | 5.51 | NP | NP | 5.51 |

Notes

- Well is located in the Natural Gas Regulator portion of the Property
- Well is located at the LNG Facility
- Well is located in the CNG Fueling Station portion of the Property
- Elevations are relative to City of Providence Datum
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- Blanks indicate no measurement collected on that particular day.
- Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.



APPENDIX Y

FIGURE Y-1 – GROUNDWATER MONITORING PROGRAM

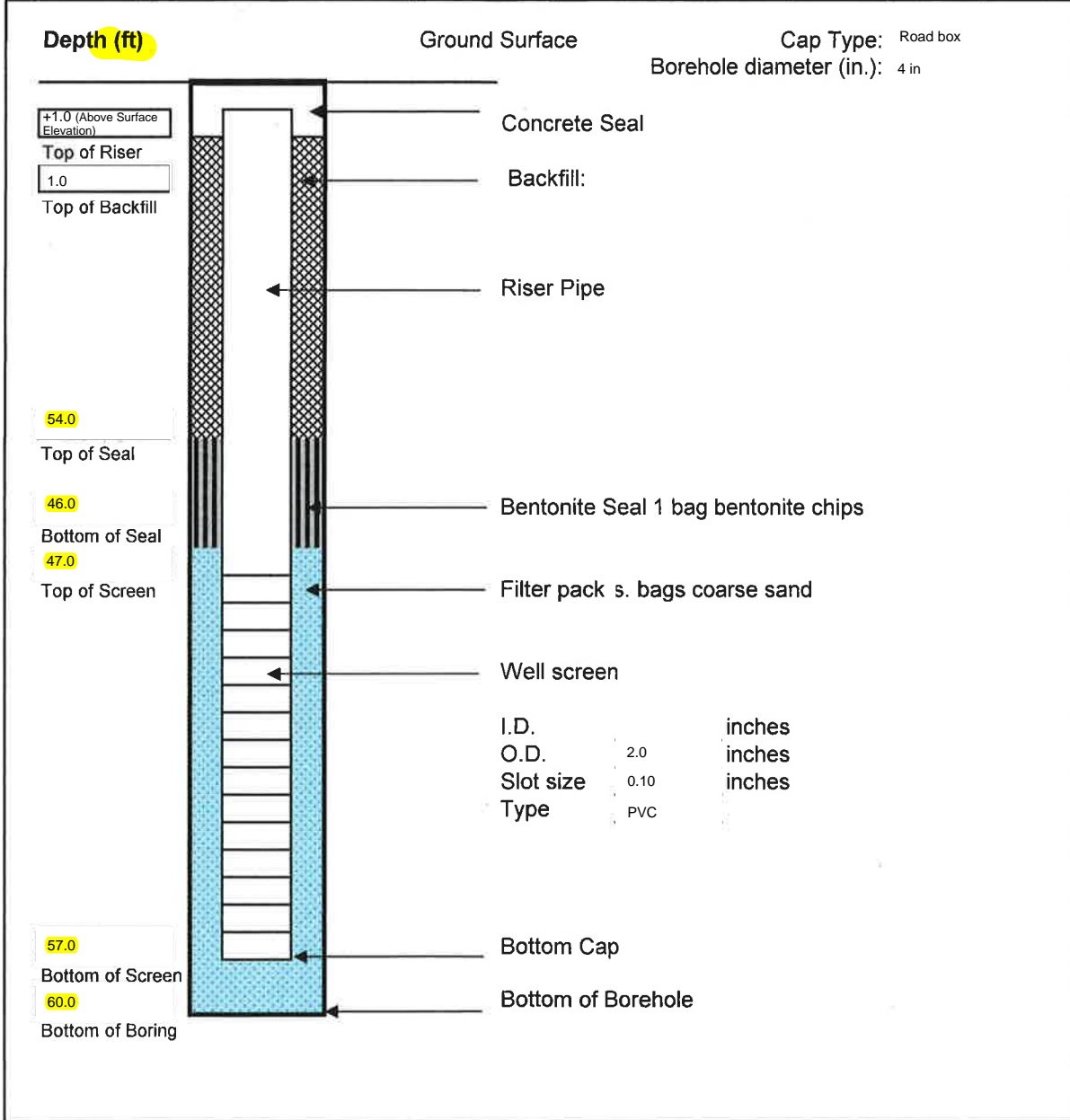


APPENDIX Z

2023 MONITORING WELL LOGS

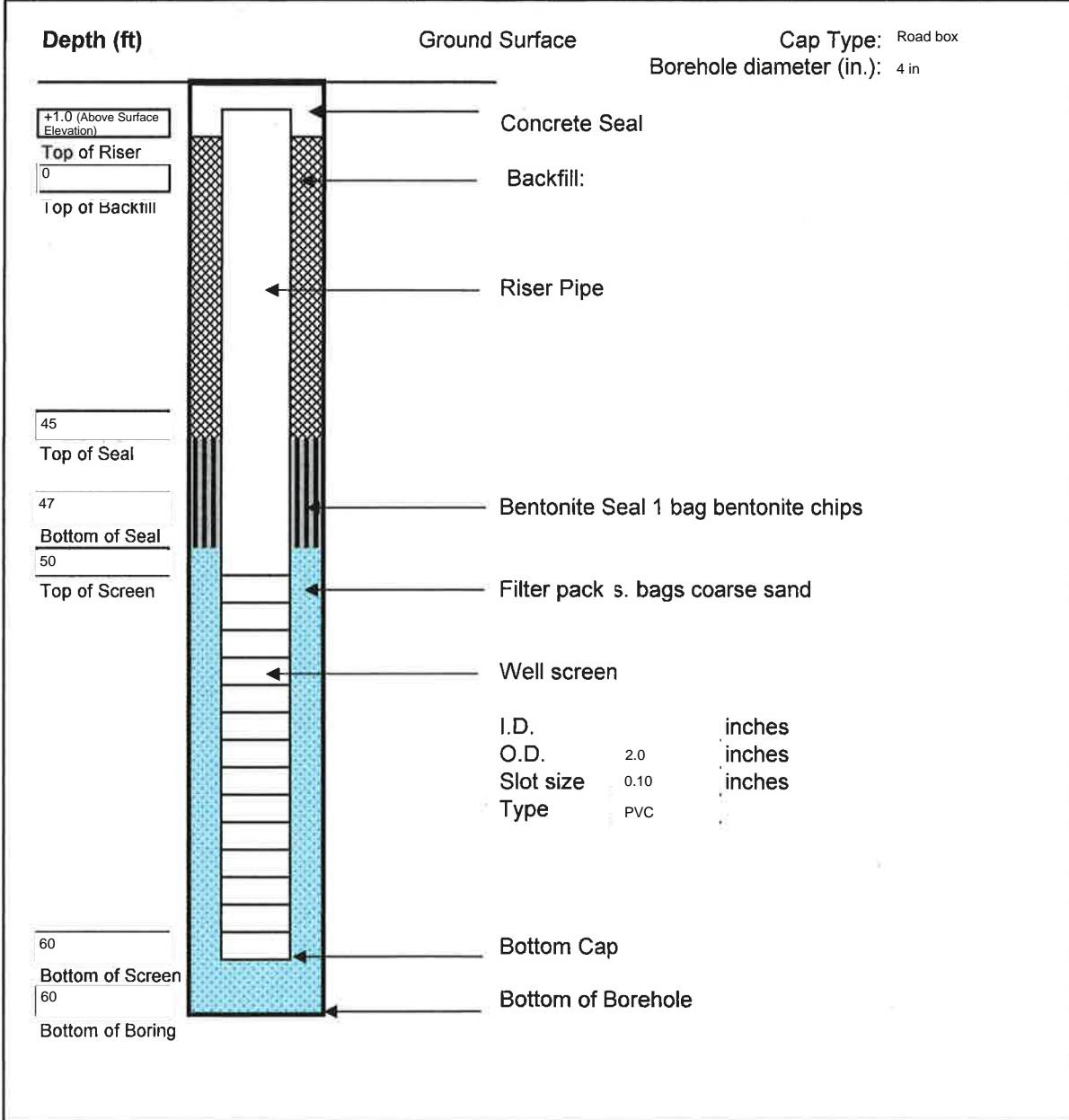


| | | | | |
|--|------------------------------------|--------------|------|-------|
| Project: TNEC Bulkhead | | Page 1 of 1 | | |
| Project No.: 33554.98 | Contractor: Geologic | Water Levels | | |
| Surface Elevation: 7.0 ft | Driller: | Date | Time | Depth |
| Top of PVC Casing Elevation: 8.0 ft | GZA Staff: C. Troughton | | | |
| Datum: NAVD88 | Date of Completion: 7/18/23 | | | |





| | | | | |
|-------------------------------------|-----------------------------|--------------|------|-------|
| Project: TNEC Bulkhead | | Page 1 of 1 | | |
| Project No.: 33554.98 | Contractor: Geologic | Water Levels | | |
| Surface Elevation: 7.0 ft | Driller: | Date | Time | Depth |
| Top of PVC Casing Elevation: 8.0 ft | Ryan Fritz GZA Staff: | 7/17/23 | | |
| Datum: NAVD88 | Date of Completion: 7/18/23 | | | |





APPENDIX AA
SITE BACKGROUND



Appendix AA

Site Background

642 Allens Avenue Former Manufactured Gas Plant (MGP)
Providence, Rhode Island

The following sections provide a summary of relevant background information for the Site. This information was obtained from earlier reports and the Site reconnaissance performed as part of investigations conducted between 2014 and 2016 and annual groundwater and site monitoring activities from 2016 through 2022. Please refer to main report attachments for figures and tables referenced herein.

SITE UTILITIES

According to observations at the Site and historical information provided by RI Energy municipal water, storm drains, sanitary sewer, natural gas and electricity service the Site. Select utilities (storm and sanitary drains) are shown on Figures 3A and 3B.

Water service at the Site is provided by the Providence Water Supply Board for fire suppression use and for potable water use. Water service lines enter the Site from Allens Avenue and from Terminal Road to service the Natural Gas Regulator Facility and from Terminal Road for the LNG Facility and Holcim Cement. Each service is protected with a hotbox at the service penetration into the Site. The separate water service lines are connected to form a loop at the Site. An extensive hydrant system is present at the Site.

Sanitary services are provided for the facility building located in the Natural Gas Regulating Facility, for the LNG facility and for the Holcim Cement Facility. NBC provides sanitary sewer service to the facility building in the Natural Gas Regulating Facility via their 102" sewer interceptor in Allens Avenue, with the final destination being the Ernest Street Wastewater Treatment Plant. As shown on Figure 3A, sanitary sewer service is conveyed from the building to MH-02, MH-01 and into the 102" interceptor. The LNG facility building and the Holcim Cement buildings are serviced via septic systems. The LNG septic system is located to the northwest of the LNG Facility Control Building and the Holcim Cement septic system is located to the south of the office trailer.

As shown on Figures 3A and 3B, an older section of line is called out as the "Old Ellis Street Sewer" which is owned by NBC. This line consists of a double 24" sewer line with a vertical separation of approximately 5 feet. The upper line is likely an overflow discharge line for the NBC stormwater tunnel system and the lower line was a condensing water intake line for the off-Site NBC wastewater treatment plant located on Ernest Street (shown on Figure 4). The upper line receives some stormwater from the off-Site NBC wastewater treatment plant property and structures within Terminal Road, and based on historical and field information, very limited (if any) stormwater from the Site. The lower line is considered to be abandoned by NBC, although it appears that few manholes on Site (MH-P and MH-U) may be tied into the line. Both lead to a discharge outfall in the Providence River, as shown on Figure 2B.

Electrical service is provided at many buildings and consists of mostly above ground lines fed from either Allens Avenue or Terminal Road.

Any utility locations shown on figures attached to this report should be considered approximate and for general information only.

ENVIRONMENTAL SETTING

The following sections provide information about the environmental setting for the Site.



Appendix AA

Site Background

642 Allens Avenue Former Manufactured Gas Plant (MGP)
Providence, Rhode Island

SITE TOPOGRAPHY

As presented on Figures 3A and 3B, the topography of the Sites slopes generally towards the Providence River, with the exceptions of the manmade retaining structures as discussed below, with an approximate maximum elevation of 20 feet NAVD 1988 along the southwestern boundary of the Site to approximately 7 feet NAVD 1988¹ along the river's edge.

As presented on Figure 3B, a large manmade earthen dike structure is present at the Site in the LNG facility. The height of the dike structure ranges from approximately 15 to 20 feet above surface grades.

As presented on Figure 3B, manmade retaining structures are present along most of the Providence River frontage. The retaining structure located to the northeast of the Site consists of a manmade steel bulkhead and the manmade structure located to the north and northwest of the Site consists of a rip rap slope. The height of the rip rap slope ranges between approximately 7 and 11 feet NAVD 1988. The rip rap slope ends at the approximate fence line between the Natural Gas Regulation Facility and the LNG facility. The remainder of the Providence River frontage is a filled slope, consisting of brick, concrete, stone and other rubble fill materials. The height of the filled slope ranges between approximately 5 and 8 feet NAVD 1988.

SITE GEOLOGY

Over one-thousand (1,000) explorations have been performed at the Site, to depths ranging from 1 to 174 feet below ground surface (bgs). These explorations are shown on Figure 5A (*Exploration Location Plan – Western Side of the Site*) and Figure 5B (*Exploration Location Plan – Eastern Side of the Site*). A review of boring and test pit logs indicates the presence of approximately up to 20 feet of urban fill underlain by organic silts / peats (variable thickness of up to 83 feet), outwash deposits (also known herein as bearing sand; at least 60 feet in thickness) and glacial till (unknown thickness to bedrock). No explorations were performed into bedrock at the Site. The depth to bedrock is expected to be over 200 feet.

The thickness of the urban fill materials was observed to be variable across the Site, ranging from approximately 8 to 20 feet. Consistent with the Site development history, the western portion of the Site generally exhibits the least significant urban fill thickness (8 to 15 feet in thickness) and the more significant urban fill thicknesses were observed on the eastern portions of the Site adjacent to the river and cove area (15 to 20 feet in thickness). In general, the urban fill material consisted of sandy materials with a heterogeneous mixture of inert materials such as ash, slag, coal, shells, brick, concrete, and wood.

The organic silt/peat is not continuous across the Site and generally is present in greatest thicknesses close to the Providence River (up to 83 feet). Based on a comparison of the depths of the sediments within the cove area to the depth of the organic silt layer in the upland portions of the Site, this unit is likely associated with the original surface of the river prior to the historical filling.

The outwash sand layer generally consists of relatively permeable sorted sands with varying amounts of gravel and silt that vary in thickness but were observed in areas up to approximately 60 feet in thickness. The outwash sands were observed to be continuous across the Site and medium dense to very dense in nature.

The glacial till layer generally consisted of a dense heterogenous unsorted mixture of sand, gravel, silt and clay, with cobbles and boulders. Glacial till is typically found immediately above bedrock. The majority of glacial till encountered at the Site was observed to be very dense.

¹ The North American Vertical Datum of 1988 (NAVD 88) is the vertical control datum of orthometric height established for vertical control surveying in the United States of America based upon the General Adjustment of the North American Datum of 1988. NAVD 1988 does not correlate to mean sea level (MSL).



Appendix AA

Site Background

642 Allens Avenue Former Manufactured Gas Plant (MGP)

Providence, Rhode Island

SURFACE WATER AND DRAINAGE

The Site is situated on the Providence River and a portion of the Site is located within the 100-year floodplain of the river. The Providence River is tidally influenced and discharges to the Atlantic Ocean via Narragansett Bay. The Providence River has been designated by the Coastal Resource Management Council (CRMC) as Type 6 waters, industrial waterfronts and commercial navigation channels. It is classified as SB1{a} waters by RIDEM. The SB1 portion of the classification is assigned to saline waters designated for primary and secondary contact recreational activities and wildlife habitat; suitable for aquacultural uses, navigation and industrial cooling; and good aesthetic value. The designation assumes that primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges, and the “{a}” indicates that it is a “partial use designation due to impacts from Combined Sewer Overflows (CSOs).”

The Providence River is currently listed by the RIDEM Office of Water Resources on the *State of Rhode Island 2022 303(d) List of Impaired Waters*, dated December 2021. The 2022 303(d) list identifies water bodies within the state, which may not currently meet Rhode Island Water Quality Standards and for which a Total Maximum Daily Load (TMDL) may be needed. TMDLs are water quality restoration plans that identify water quality goals, necessary pollutant reductions, sources, and implementation plans to achieve the required reductions. RIDEM identifies the segment of the Providence River adjacent to the Site as Water Body ID RI0007020E-01B and lists the impairments as low dissolved oxygen, nutrients, and pathogens.

The Site contains grass-covered areas, paved areas, gravel covered areas, vacant areas, natural gas utility infrastructure, several occupied buildings and several vacant buildings. Based on review of information presented in the Environmental Resource map maintained by RIDEM (<http://www.dem.ri.gov/maps/>), the Site is located in the Seekonk – Providence River Drainage Basin. Stormwater at the Site is managed by separate on-Site drainage systems. As shown on Figure 3A, stormwater from the natural gas facility building parking lot is conveyed to the Ernest Street Wastewater Treatment Plan via MH-01 to 102” sewer interceptor. Roof runoff from the natural gas facility building (shown on Figure 3A) is conveyed to the 16” stormwater line in Allens Avenue, with a final outfall location in the Providence River located on A.P. 55 Lot 18 (owned by Motiva Enterprises). Stormwater from the remainder of the Site either infiltrates through Site soils² or discharges through an on-Site stormwater drainage system (with a final destination through an oil/water separator into the Providence River), as shown on Figures 3A and 3B. Several sumps located at the LNG facility act as stormwater collection points with discharge via a force main into CB#43, with a final destination of the oil/water separator and into the Providence River. RCA noted in their 1994 *Site Characterization Report*, that in the early 1970s, in connection with the construction of the LNG facility, PGC excavated a perimeter trench along the eastern and southeastern margins of the Natural Gas Regulation Facility. Drainage lines encountered during trenching were severed and capped, and the trench was then backfilled.

SHEEN OBSERVATIONS

Between January 2012 and December 2022 the shoreline adjacent to the Site was inspected for the presence of sheens in the Providence River on at least a monthly basis. During the Fields Point Liquefaction Project (FPLP) (approximately January 2019 to July 2022) the shoreline was inspected for sheens on a daily basis. Portions of the Site’s shoreline are surrounded by both hard boom and absorbent sausage boom to contain any observed sheen. Boom has been maintained in this cove since at least 2002. The current boom configuration is illustrated on Figure 3B and Figure 4. Sheen observations have been limited to the following two general shoreline areas: 1) the shoreline between the Former Propane House and CHES RW-5; 2) the outfall at the intersection of A.P. 55 Lot 196 (owned by Motiva) and A.P. 56 Lot 5 (owned by RI Energy). Sheens have not been observed at the outfall proximate to RCA-3. More significant sheens have generally been observed at mid- or low-tide only and generally

² As noted below, TNEC has performed two projects utilizing STRAPs which included the installation of stormwater controls for each project.



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Site Background

642 Allens Avenue Former Manufactured Gas Plant (MGP)
Providence, Rhode Island

consisted of bright spots and bands. Sheens observed at high tide were generally less significant and observed intermittently. The sections of the absorbent sausage boom have been repaired or replaced intermittently during this time period. Sheen observations during the January 2012 and December 2022 time period are summarized in Table 12.

Groundwater

Based on review of information presented in the Environmental Resource map maintained by RIDEM (<http://www.dem.ri.gov/maps/>), groundwater in the area of the Site is classified as "GB," which indicates that groundwater may not be suitable for public or private drinking water use without treatment due to known or presumed degradation. Based on surrounding topography, regional groundwater at the Site is expected to flow towards the Providence River and neighboring cove.

Site groundwater elevations are tidally influenced and have been observed to fluctuate approximately 3 feet between mean low and high water. Groundwater was encountered in many of the explorations at the Site at depths ranging from approximately 3 to 13 feet bgs (elevation 7 to 1 feet NAVD 88), with shallower groundwater elevations encountered close to the Providence River at the LNG Facility (RCA-6 and RCA-36). Shallower groundwater was also encountered proximate to the northern Site boundary in the Natural Gas Regulation Facility (VHB-1, VHB-3, GZ-305S, GZ-306S, GZ-307S and GZ-308S). Groundwater in this area is likely influenced by utility corridors. As presented on Figure 6B, based on measurements collected in May 2016, shallow groundwater beneath the Site flows from west to east towards the Providence River. These observations are consistent with comprehensive groundwater elevations collected on an annual basis.

Several monitoring well couplets were installed at the Site (RCA-12R and GZ-301D, GZ-302S and GZ-302D, GZ-303S and GZ-303D, RCA-12R and GZ-304D, VHB-1 and GZ-309D, VHB-10 and GZ-320D, VHB-3 and GZ-311D, GZ-312S and GZ-312D, RCA-3 and GZ-313D, VHB-21 and GZ-318D, VHB-20 and GZ-319D, GZ-314S and GZ-314D and RCA-5 and GZ-315D). The data generally indicates that groundwater flow at the Site has a generally intermittent (upward and downward) component of flow, which indicates that the wells proximate to the Providence River are likely at least slightly tidally influenced.

FLOOD PLAIN

Based on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (map number 44007C0317J, dated September 18, 2013) approximately half of the Site appears to be inside the 100-year flood plain associated with the Providence River. Based on review of the FEMA Map, portions of the Site closest to the Providence River are characterized as Zone AE, with a flood elevation of 12 feet NAVD 1988. Most of the remainder of the Site is located in Zone X. Zone AE are areas that have a 1% probability of flooding every year (also known as the "100-year floodplain"), and where predicted flood water elevations above mean sea level have been established. Properties in Zone AE are considered to be at high risk of flooding under the National Flood Insurance Program (NFIP). Zone X is defined as flood zones with 0.2% chance of annual flooding.

OTHER ENVIRONMENTALLY SENSITIVE AREAS

Based on review of information presented in the Environmental Resource map maintained by RIDEM (<http://www.dem.ri.gov/maps/>), the Site lies within the Seekonk – Providence River Drainage Basin. The Site is located with a RIDEM-designated groundwater reservoir. According to the RIDEM Groundwater Quality Rules dated June 2010, a RIDEM-designated groundwater reservoir means "those stratified drift deposits having a saturated thickness greater than or equal to 40 feet and a transmissivity greater than or equal to 4000 feet squared per day which have been designated by the Director to be potentially significant sources of water". The Site is not located within a sole source aquifer, a groundwater recharge zone or a wellhead protection area. The Site is not located within 1 mile of a wellhead protection area. The Site is located at least 1.8 miles from an area with a GA groundwater use designation.



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HISTORICAL USE INFORMATION

Former Site operations represent the primary sources of observed impacts. As indicated previously, these operations have included the Former MGP, Former liquid petroleum gas (LPG) / propane gas storage and distribution, and Former petroleum storage and distribution. A brief description of each of the operations is described in the sections below. Figures 5A and 5B present a compilation of historical features and structures associated with past Site operations.

RCA on behalf of the PGC conducted a comprehensive characterization of the Site between 1994 and 1995 which was documented in the July 1994 *Site Characterization Report* and February 1995 *Summary Report – Phase 1A Field Investigations*. The scope of work implemented during this Site characterization entailed Site inspections, historical research, environmental evaluations, regulatory file reviews, local reconnaissance, and interviews with PGC personnel (Site operators at the time of the work). RCA summarized the Site history, probable constituents of concern based on Site historical operations, current operations, and the results of the Site inspections. For more detailed information about the history of the Site, please refer to these documents.

MGP OPERATIONS

The PGC operated a coal gasification plant from 1910 to 1953 on the Site. Coal carbonization consisted of heating coal in a sealed chamber with destructive distillation of gas from the coal, and the formation of coke. Vertical retorts were used for the coal carbonization from 1910 to 1919; after 1919, gas ovens were used until the plant was abandoned in 1953. The gases were collected from the carbonization apparatus and then cleaned and distributed. The non-volatile residue, coke, was sold or reused. The other by-products, such as tar, ammonia, cyanogen, naphthalene, light oils, hydrogen sulfide, and spent oxides, were removed during the process of gas condensing and purifying in the Former Condenser House (Former Compressor Building No. 1) and the Former Coal Gas Purifier House (present Compressor Building No. 2). Coal gasification operations were generally conducted proximate to the current LNG facility (Figure 5B), with regulating and distribution of the gas closer to the current Natural Gas Regulating Facility (Figure 5A).

The PGC operated a carbureted blue gas (or carbureted water gas (CWG)) operation beginning in 1917. In 1952, this portion of the facility was converted to a high-BTU oil gas plant. The water gas process used coke (or coal), steam, and various oil products to produce a combustible product gas. Steam was fed through a bed of incandescent coke, producing a gas containing hydrogen and carbon monoxide (blue gas). A carburetor added oil vapors, which produced oil gas, and a superheater fixed the mixture of blue gas and oil gas to create carbureted water gas. After carburetion, the gases were collected, cleaned, and mixed with coal gas for final distribution. The principal by-products of this process were tars, spent oxides, ash/clinker material, and a tar and water emulsion. Carbureted water gasification operations were generally conducted proximate to the current LNG facility (Figure 5B), with regulating and distribution of the gas closer to the current Natural Gas Regulating Facility (Figure 5A).

The PGC operated a producer gas operation beginning in 1922, which ceased before 1953. Producer gas was used to heat the coke ovens and to dilute other gases. This process entailed aeration of incandescent coke to produce carbon monoxide and nitrogen. Steam was admitted with the air to control ash formation. Producer gas was cleaned and cooled before it was pumped either to the coke ovens or to a relief gas holder. The by-products from this process were principally the same as those created by coal or water gas manufacture. Producer gasification operations were generally conducted proximate to the current LNG facility (more producer gas operations located in the southern portion of this area – Figure 5B), with regulating and distribution of the gas closer to the current Natural Gas Regulating Facility (Figure 5A).

The PGC operated a high-BTU oil gas operation beginning in 1952 when the carbureted water gas plant was converted into the oil gas plant. Based on historical reports prepared by RCA referenced above, it appears that the operation ceased before 1970. The oil gas process was based on the gasification of oils and steam by passing them through a chamber of heated checker bricks.



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The major by-products from the oil gas process were lampblack, tar, and light oils. Oil gasification operations were generally conducted proximate to the current LNG facility (Figure 5B), with regulating and distribution of the gas closer to the current Natural Gas Regulating Facility (Figure 5A).

Coke, the principal non-volatile by-product of the coal gasification operations, was reused or sold. According to historical reports prepared by RCA referenced above, Site operations included on-Site recycling of coke as a filter medium and a process fuel. Many volatile by-products at the Site were also reused or recovered for sale. The Former B. P. Clapp Ammonia Works Building (Figure 5A) recovered ammoniacal liquor from ammonia scrubbing operations starting in 1910. During the First World War, the United States Government extracted toluol and benzol (benzene and toluene) from coal and water gas in the Former Benzol building (Figure 5A). Recovered and reprocessed materials were shipped from the Site for sale or re-use.

LIQUEFIED PETROLEUM GAS OPERATIONS / PROPANE GAS OPERATIONS

PGC operated a LPG plant beginning in 1952. According to historical reports prepared by RCA, the plant consisted of five 30,000-gallon tanks and the necessary vaporizing and mixing equipment. LPG produced off-Site was shipped to the Site in trucks or railroad cars to the Site for storage and distribution. The LPG became gas as the pressure was released, and supplemented the manufactured gas and natural gas during peak gas demands. The chief constituents of LPG are propane, propylene, butane, butylene, iso-butane, and air, mixed in any proportion. LPG operations ceased in the 1960s. Subsequently, the LPG plant was utilized by the PGC for propane gas storage and distribution to supplement manufactured gas and natural gas during peak gas demand times. Propane gas storage and distribution was phased out at the Site in late 1980s. LPG/propane operations were generally conducted proximate to the center of the Site near the Former Propane House (Figures 5A and 5B).

PETROLEUM STORAGE AND DISTRIBUTION

According to historical reports prepared by RCA, oil used in the production of manufactured gas was stored in two aboveground storage tanks located at the northeast corner of the Site (proximate to the current LNG tank – Figure 5B). PGC also constructed a 150,000-gallon oil or tar storage facility in 1953 (location unknown), bringing the total on-Site storage capacity to 2,150,000 gallons, at the time the MGP operations ceased.

Gulf Oil Corporation leased a portion of the Site during 1957 and built four aboveground storage tanks (ASTs) with an aggregate storage capacity of 420,000 gallons of kerosene on the premises (exact location of all tanks unknown, although the location of one of the tanks is shown on Figure 5B). According to historical reports prepared by RCA, the Former Gulf Oil facility was located in the northeastern portion of the Site in the area presently occupied by the LNG facility (Figure 5B).

Several additional ASTs and USTs have been utilized at the Site for petroleum products storage as presented below

STORAGE TANKS

Storage tanks that have been or are presently located at the Site include USTs, ASTs, Former tar tanks, Former ammonia tanks, Former purifier tanks and Former Gasholders. This section discusses storage vessels that contain liquids, compressed gases, or gases under low pressure. Based on review of information presented in the Environmental Resource map maintained by RIDEM (<http://www.dem.ri.gov/maps/>) and historical records provided by TNEC, there were/are several different types of storage tanks located at the Site. Several additional process tanks were remediated during remedial actions in the early 2000s as presented in Section 4.1 and Appendix F (*Summary of Remedial Action (1995 through 2002)*).



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USTs

Two (2) 4,000-gallon gasoline USTs installed in 1974 existed proximate to the Holder Heating Building at the Site, located along the property line running parallel to Terminal Road (Figure 5A). These USTs were registered in 1985. A remote dispenser pump was used in connection with the USTs to fuel vehicles. Remedial actions are described in Section 4.00 and Appendix F and a Certificate of Closure was issued by RIDEM on December 11, 1995.

The east end of the Compressor Building No. 2 located in the central southeastern portion of the Site (Figure 5A) contained two (2) 10,000-gallon USTs of concrete construction. Tank fills were noted on the exterior south wall of the building; vents existed on the east side. These USTs were Formerly used to store used system condensate or waste oil. The closure of these USTs was documented in in Section 4.00 and Appendix F. A Certificate of Closure was issued by RIDEM on December 12, 1995.

A 2,500-gallon diesel UST was installed under Compressor House No.2 building (Figure 5A). This tank was installed in 1984 and registered with RIDEM's Underground Storage Tank Program in 1985. Remedial actions are described in Section 4.00 and Appendix F and a Certificate of Closure was issued by RIDEM on January 12, 1999.

There are no RIDEM leaking underground storage tank (LUST) files for the Site.

ABOVEGROUND STORAGE TANKS (ASTs)

According to historical reports prepared by RCA, a 10,000-gallon, cradle-mounted, horizontal, cylindrical oil storage tank, was located near the Former Booster House in the central western portion of the Site (Figure 5A). The tank was reportedly used to store fogging oil. The tank was removed from the Site at some point between 1988 and 1997.

As noted above, PGC operated a LPG / propane gas plant at the Site. A series of LPG tank cradles occupied the central portion of the Natural Gas Regulation Facility (Figure 5A and 5B). These cradles once held horizontal pressure vessels of propane. These tanks were removed before 1993 and the cradles were removed before 2002.

A diesel-fueled emergency electrical generator is located on the second floor of the Compressor Building No.2 (Figure 5A) and is fed by a day tank and associated transfer pump located on the second floor of the building. Based on review of information presented in the Environmental Resource map maintained by RIDEM (<http://www.dem.ri.gov/maps/>) and historical records provided by TNEC, this double-wall steel tank was installed in 1980, has a capacity of 2,000 gallons and is currently in use.

The building referred to as the "Odorizer House" located in the central portion of the Site (Figure 5A) is used to store the odorant added to natural gas. At the Odorizer House, 100-gallon cylinders of methyl mercaptan are stored for use as an odorizer on the Site. Based on review of information presented in the Environmental Resource map maintained by RIDEM (<http://www.dem.ri.gov/maps/>) and historical records provided by TNEC, a 1,000-gallon steel AST is located in this building to store odorant and is currently in use.

Based on review of information presented in the Environmental Resource map maintained by RIDEM (<http://www.dem.ri.gov/maps/>) and historical records provided by TNEC, a 1,800-gallon poly tank is located in Compressor Building No. 2 (Figure 5A), is utilized to store "oil and poly-chlorinated biphenyls (PCBs) drip water" and is currently in use.

Based on review of information presented in the Environmental Resource map maintained by RIDEM (<http://www.dem.ri.gov/maps/>) and historical records provided by TNEC, three (3) 2000-gallon double-wall steel tanks (with



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containment) were installed in 1999 in a LNG facility building for backup generator use (Figure 5B), are utilized to store light diesel and are currently in use.

Algonquin Gas Transmission Company built a 600,000-barrel (3.37 million cubic feet (MMcf)) LNG facility in 1972. The LNG storage tank occupies the interior of a bermed portion of the LNG facility (Figure 5B). LNG is currently stored in the tank, under pressure and the Site currently operates as a LNG facility.

As presented in the 1994 *Site Characterization Report* prepared by RCA on behalf of PGC, there were several additional above ground petroleum storage tanks located at the Site:

| Location | Type of Tank | Figure Reference | Status |
|--|----------------------|------------------|--|
| Northwestern Side of the LNG dike wall | Former Oil Tanks | 5B | Currently located underneath the LNG dike wall and limited room for excavation. Excavation at the edge of the dike wall during a facility project exposed an edge of this structure. Structures believed to have been entirely above ground. Demolished at some point between 1972 and 1981. |
| Northeastern Side of the LNG dike wall | Former Kerosene Tank | 5B | Currently located underneath the LNG dike wall and LNG tank with limited room for excavation. Structure(s) believed to have been entirely above ground. Demolished at some point between 1962 and 1972. |
| Southeastern Side of the LNG dike wall | Former Gas Tank | 5B | Currently located underneath the LNG dike wall and LNG tank with limited room for excavation. Structure believed to have been entirely above ground. Demolished at some point between 1956 and 1972. |
| Near Former Compressor House No. 1 | Former Fuel Oil Tank | 5B | Structure believed to have been entirely above ground. Demolished at some point between 1956 and 1972. |

FORMER MGP RESIDUALS STORAGE TANKS

As presented in the 1994 *Site Characterization Report* prepared by RCA on behalf of PGC, there were several additional tanks that were utilized to storage residuals from the manufactured gas process:

| Location | Type of Tank | Figure Reference | Status |
|------------------------------------|-----------------------------|------------------|---|
| Oxide Box Area | Former Purifier Tanks | 5A | Former purifier tanks suspected to be demolished between 1972 and 1981. Test pits completed by VHB in 2009 (see 2009 <i>Oxide Box Waste Summary Memo – Appendix D (Summary of Completed Investigations (1994 through 2009))</i>) for more information) encountered the likely foundation remnants. |
| Near Former Compressor House No. 1 | Former Tar and Ammonia Pits | 5B | Structure excavation, cleaning and backfill in 2002. Documented in the November 2002 <i>Remedial Action Closure Report</i> (see Section 4.00 and Appendix F for more information). |
| | Former Ammonia Storage Tubs | | |



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| Location | Type of Tank | Figure Reference | Status |
|---|-------------------------------|------------------|--|
| Northwestern Side of the LNG Dike | Former Above Ground Tar Tanks | 5B | Currently located underneath the LNG dike wall with limited room for excavation. Excavation at the edge of the dike wall during a facility project exposed an edge of this structure. Structure believed to have been entirely above ground. Demolished at some point between 1972 and 1981. |
| Proximate to the Former Producer Gas Plant | Former Tar Tank | 5B | Unknown. Not mentioned in the December 2002 <i>Remedial Action Closure Report</i> , however, the Former tar tank is very close to the Former tar and ammonia pits and may have been remediated at the same time (see below). Located at the edge of the LNG dike wall with very limited room for excavation. |
| | Former Tar and Ammonia Pits | 5B | Structure excavation, cleaning and backfill in 2000. Documented in the December 2002 <i>Remedial Action Closure Report</i> (see Section 4.00 and Appendix F for more information). |
| Proximate to the Providence River (southwest of the LNG Dike) | Former Open Cooling Tank | 5B | Structure excavation, cleaning and backfill in 2002. Documented in the November 2002 <i>Remedial Action Closure Report</i> (see Section 4.00 and Appendix F for more information). |
| | Former Tar Tank | | |
| | Former Open Separating Tanks | | |
| | Former Filters | | |

FORMER GASHOLDERS

Three (3) Gasholders were present at the Site. Former Gasholder No. 18, located in the southwestern corner of the Site along Terminal Road (Figure 5A), was built in 1911 and measured approximately 220 feet in diameter and 28 feet tall in the “closed” position (6 MMcf). Former Gasholder No. 21, located immediately to the east of Former Gasholder No. 18, was built in 1947 and measured approximately 163 feet in diameter and 40 feet tall in the “closed” position (3 MMcf). When MGP operations ceased at the Site, both Gasholders were utilized for storage of natural gas until the 1980s. Both Gasholders were decommissioned and demolished in 2010. The decommissioning and demolition was documented in the July 2010 *Construction Completion Report for Demolition and Decommissioning of Gasholders Nos. 18 and 21* prepared by Brown and Caldwell on behalf of TNEC, as described in Section 4.00. As shown on Figure 7 (*Completed Remedial Action (1995-2017)*) and Figure 8 (*Existing Engineered Controls*), the Holder 18/21 area was capped in 2016. Remedial actions in this area are described **Error! Reference source not found.** in Sections 4.1 and 4.4.

The other Former Gasholder was located in the LNG portion of the property adjacent to the cove/Providence River and was an above grade Gasholder (called out as “Former Relief Holder No. 16” on Figure 5B). Based on information presented in the December 1998 *RAWP* prepared by ESS on behalf of PGC, the relief Gasholder structure itself was believed to be entirely above grade (0.5 MMcf capacity) and was supported by a timber pile relieving platform. The relieving platform was likely designed to mitigate settlement of the underlying compressible soils and to alleviate tidal influences. The above ground portion of the relief Gasholder was demolished at some point between 1972 and 1981. Based on explorations conducted by others, the below ground foundation portion of the relief Gasholder is intact and is located approximately 12 inches bgs.



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REGULATORY HISTORY

The Site has been subject to extensive investigation and remedial efforts. A summary of the regulatory history of the Site remediation effort is presented below.

LETTER OF RESPONSIBILITY

RIDEM issued a Letter of Responsibility (LOR) on February 13th, 1998 to PGC based on results presented in the February 1995 *Summary Report – Phase 1A Field Investigations* prepared by RCA on behalf of the PGC and the *June 1996 Summary Report – Phase 1B Field Investigations* prepared by RCA on behalf of the PGC. The Site was listed as State Site #98-004 (RIDEM File No. SR-28-1152) following the issuance of the LOR.

REMEDIAL ACTION WORK PLANS

Remedial activities were proposed by PGC and presented in a report entitled *Remedial Action Work Plan, Providence Gas Company, Providence, RI*, which was revised and amended multiple times, with the final version dated December 4, 1998. The *RAWP* was the result of investigation work conducted by RCA and others prior to 1996. The *RAWP* concentrated on the remediation of Former MGP structures and soil source areas that were discovered during the pre-1996 investigations and concentrated most efforts to the LNG portion of the Site. As further detailed in the 1998 *RAWP*, the remedial efforts generally consisted of the following:

- Established Remedial Objectives for surface and subsurface soils at the Site. Surface soil remedial objectives are generally consistent with soils meeting the RIDEM I/C-DEC.
- Dewatering of specific subsurface MGP structures prior to removal of contents with water processing through an on-Site wastewater treatment system.
- Excavation and blending of subsurface MGP structure contents and impacted Site soil for off-Site co-burning at a coal fired utility boiler.
- Installation of the containment boom in the cove area at the Site.
- Backfilling of subsurface structures and excavated areas with fill or construction debris meeting the established Remedial Objectives obtained from either off-Site or on-Site sources.
- Removal of LNAPL from the groundwater surface encountered during excavation, with transfer of the LNAPL to the on-Site wastewater treatment system.
- Removal of underground product piping encountered during excavation activities.

RIDEM had issued a *Remedial Decision Letter* on October 29, 1998 which agreed to the proposed remedy (as presented to RIDEM in a prior version of the December 4, 1998 *RAWP*) but noted several other permitting agencies that would be required to approve before RIDEM would issue a *Temporary Remedial Action Permit (TRAP)*.

RIDEM approved the December 4, 1998 *RAWP* on June 1, 1999 with a *TRAP*. The *TRAP* noted that RIDEM did not feel Site investigation activities were complete but that the planned limited remedial action was acceptable.

VHB modified the *RAWP* on behalf of the NEGC in November 2001 (known herein as the *MRAWP*) to reflect additional proposed remedial work:

- Additional source removal was proposed from Former MGP structures. The *MRAWP* proposed to remove this source material, dispose of them off-property and backfill the areas with suitable fill meeting the approved Remedial Objectives.



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- Additional soil and LNAPL removal that was suspected to be associated with MGP wastes was proposed. The *MRAWP* proposed to remove these soils, dispose them off-property and backfill the areas with suitable fill.
- An active seep area was detected proximate to the Providence River in the tidal inlet that bounds the property to the north. The *MRAWP* proposed to mitigate the seep by removing active gas piping and then removing MGP-impacted materials, piping and MGP remnants structures from the shoreline. The *MRAWP* noted that after those mitigate efforts were complete, the appropriateness of installing a flow retarding structures, such as a slurry wall was planned to be evaluated and possibly installed before closing the excavated areas.

RIDEM approved the November 2001 *MRAWP* on April 17, 2002 with a *TRAP*. A RIDEM order in the *TRAP* indicated that portions of the Site that were not included in the LNG facility were not adequately characterized and therefore RIDEM required the submittal of an *SIR* incorporating the remainder of the Site within 90 days of completing the *MRAWP* activities. VHB submitted a *SIR* to RIDEM in April 2003 (see Section 3.00 and Appendix D for more information).



GZA GeoEnvironmental, Inc.